No. 10. AUGUST, 1866. 1s. 6d.

JOURNAL

OF

Social Science.

INCLUDING THE

SESSIONAL PAPERS

OF

THE NATIONAL ASSOCIATION

FOR

THE PROMOTION OF SOCIAL SCIENCE.

EDITED BY

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PUBLISHED MONTHLY.

LONDON:
CHAPMAN AND HALL, 193, PICCADILLY,
AND ALL BOOKSELLERS.

C. WHITING] [LONDON.

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With which is united the Society for Promoting the Amendment of the Law.

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VIVISECTION:

IS IT NECESSARY OR JUSTIFIABLE?

BEING TWO PRIZE ESSAYS,

BY

G. FLEMIMG, Esq., F.R.G.S., F.A.S.L.,

AND

W. O. MARKHAM, Esq., M.D., &c.

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THE STUDY OF THE NATURAL SCIENCES REGARDED AS AN INSTRUMENT OF EDUCATION.

By a Cambridge Man.

IT is not conceivable that men in any state of civilization worthy of the name, should be daily witnesses of the grand operations of nature, or even of the minor changes and phenomena which present themselves so beautifully and regularly around them, without having their curiosity awakened, and without feeling a desire to investigate these appearances further; to discover the ultimate laws of causation on which they depend, and the relations they bear to each other. To prosecute these inquiries to any considerable extent, a certain amount of leisure and independence are absolutely necessary. Accordingly, a nation must have obtained some success in the struggle for existence before the study of the natural sciences becomes possible. When a nation has so far emerged from barbarism that the individuals composing it, or, at any rate, some—the more contemplative of them—are no longer restrained by necessitous circumstances, either of self-support or self-protection, from yielding to the promptings of their own curiosity and desire of knowledge, it is natural—indeed, history teaches it is inevitable—that certain of them should devote themselves with more or less exclusive ardour to contemplate, to classify, and, if possible, to explain the phenomena of the material universe which fall within the range of their powers of observation.

Thus, the natural curiosity of humanity, which, if unintelligent, leads the savage to fabricate a system of superstition that acts as a strong barrier against him in his advance towards civilization, when manifested in a more intelligent form among men higher in the ethnological scale, conduces to the rise of natural science, the study of which not only is a powerful engine of intellectual education, but redounds to the physical well-being of man, by rendering the highest development of the arts possible. Again, when the practical applications of the natural sciences become more numerous and important, the number of those engaged in physical research is increased by observers other than mere lovers of knowledge, and the rate at which these studies advance is constantly and rapidly accelerated. "Between the physical sciences and the arts of life there subsists a constant

mutual interchange of good offices, and no considerable progress can be made in the one, without of necessity giving rise to corresponding steps in the other."*

The foundation of all the natural, *i.e.* the inductive sciences, is experience. Without it, induction becomes impossible, simply because without it the facts and phenomena with which the natural historian deals remain unknown. Experience is twofold, embracing "experiment" and "observation." The former may be termed its active, the latter its passive phase. It is not, of course, pretended that it is in all cases, or, indeed, in many, possible to define with rigorous precision the limits of experiment and observation; nevertheless, this broad and general distinction is one which it is practically easy to appreciate and apply. It is also at once evident, that in the normal growth of any physical science, the first step upwards must be due to observation rather than to experiment. In observation, as it were, we assume the rôle of attentive listeners to the speech of Nature herself; while in experiment, we interrogate and cross-examine her, compelling her by our importunity to supply information which we could in no way obtain by the method of observation.

The phenomena, and the relations of phenomena that men formulate into laws, of which we obtain cognizance by observation, are usually the simplest which nature exhibits. And it is quite possible that observers may obtain a very considerable acquaintance with the facts of nature, and even classify and explain them in a way that is in the main true, without feeling the necessity of recourse to experiment at all, excepting always such easy experiments as would be made almost instinctively. As soon, however, as the human mind rises from the consideration of isolated facts and their causes to the consideration of the great laws, in accordance with which, and as manifestations of which these phenomena appear—the primary importance, the absolute necessity, in fact, of experiment, makes itself felt. The study of the natural sciences, unless corrected and regulated by the results of experiments performed intelligently and honestly—that is, without any bias warping the facts so obtained into agreement with preconceived opinions—has a natural tendency to degenerate into a mere vain pretence of knowledge, resting, it may be, on a certain small substratum of truth, but either shrouded in mysticism or fettered by dogmatism, not capable of promoting the arts and amenities of life, or of affording any means of sound intellectual education.

History teaches us that these views concerning the nature and conditions of the progress of the study of these sciences are essentially true. Among the ancients, almost the only physical sciences

* Sir J. Herschel's "Discourse on the Study of Natural Philosophy."

which received any cultivation at all, were astronomy and mechanics, including under the latter the dynamics and statics of solids and liquids. It was not possible that the more obvious phenomena presented night by night to man's gaze by the celestial bodies should escape notice; and it was equally impossible that the men who carefully observed and recorded them should not construct theories of more or less ingenuity and plausibility, to account for and explain them.

That such was the fact, we know; the observations of the Chaldeans and Egyptians were sufficiently numerous and accurate to serve as a basis for the predictions of eclipses, and had also been sufficient to render possible the discovery of the cycle of lunar eclipses. Moreover, the speculations to which these observations gave rise were just, and in themselves philosophical.

At the same time that astronomy was receiving its due share of attention from the ancients, attempts were made, and with considerable success, to investigate and account for the less striking examples of motion, and other manifestations of mechanical force which surrounded the observer on every side.

Before the era of Aristotle, mechanical science, both as an independent study, and as a pursuit ancillary to astronomy, made rapid, sound progress. Aristotle promulgated the dogma that the celestial motions were governed by laws peculiar to themselves, and wholly different from and independent of those concerned in the ordinary terrestrial phenomena of mechanics. The effect produced by the introduction of this principle into speculations in physical science was disastrous in the extreme. It at once degraded astronomy from a science into something little higher than a handicraft—into a mere science of record; nay, more, it threw around it, and enveloped it in a net of cumbrous hypotheses concerning cycles and epicycles, which must have imparted to the study a tedium and irksomeness almost intolerable. In thus condemning the dogmatism of Aristotle in its relation to the physical sciences of his time, I do not wish at all to dissent from the high admiration universally entertained for the Stagirite as a moral and even physical philosopher. His teachings prove him to have been a man far superior to the system he was the instrument of imposing upon subsequent observers; he himself seems to have thoroughly understood and admitted the importance of experience, including both experiment and observation, as the true foundation for the inductive sciences. Most of his works on physical science are not extant; but his treatise on animals, which, fortunately, has come down to us, contains a body of observations and a system of sound classi-

fication, which prove him to have obtained no mean and incomprehensive view of animated nature. In the department of natural history he was unrivalled among the observers of classical times; and in the faculty of philosophical generalization and speculation, and the employment of this faculty, second to few of the moderns. Some late writers, indeed, and notably some German naturalists, have gone so far as to assert that the germs of most of the really scientific views in biological science are to be found, more or less advanced, in the works of Aristotle.

With some few brilliant exceptions, it would seem that the study of the natural sciences was not congenial to the Greek mind. Perhaps this remark is more applicable to the latter than the earlier Greek philosophers. The advances in physical science made by such men as Thales, Pythagoras, and subsequently, Hipparchus, are of too great importance to be overlooked. Pythagoras, indeed, advocated the general view of the relations of the solar system which is now universally received; it is said even that his speculations on the influences, or forces, which retained the various members of the system in their orbits, brought him very near the discovery of the solar attraction as the bond of union. The simplicity and beauty of the Pythagorean views cause them to stand in strong and favourable contrast with the unwieldy structure of hypotheses subsequently built up little by little, as fresh facts were observed; each addition serving but to increase the complexity, until the whole system of "cycle on epicycle, orb on orb," resulted in hopeless confusion.

The Greeks, especially those subsequent to Aristotle, failed to prosecute the study of the natural sciences; chiefly, it appears, through adopting a vicious mode of inquiry. They proceeded, or rather they endeavoured to proceed, by the method of definition rather than by that of experience. That is, they forsook induction for deduction; and inasmuch as this can only be done with anything like success when physical science is very far advanced, they failed. Even when any physical science is so far advanced that men think they have attained its ultimate principles, the deductive method most only be employed with extreme caution, and the results so obtained require to be most rigorously tested by experience.

Subsequently to the researches of Aristotle, the spirit of inquiry, and the habit of appealing to Nature herself for the principles of natural science, languished more and more, and finally, well nigh died out. They were succeeded by endless verbal discussions between disciples of different schools of philosophy, whose object appears to have been rather to triumph over an opponent than to arrive at the truth itself; or, if men did

trouble themselves with facts, it was generally to force them into agreement with opinions and principles held or enunciated on insufficient grounds, and often in themselves eminently unphilosophical.

The Romans were contented to receive their knowledge of physical science, together with the fine arts, from the Greeks, and to allow scientific research to remain at or near the point to which the latter had brought it. Their greatest naturalist, Pliny, the elder, did not advance beyond Aristotle in true and just insight into the history and nature of natural objects. The genius of the Romans produced jurists, not physicists or biologists; nor did the study of the natural sciences fare better among the observers of Arabia, or, subsequently, among the Arab occupants of the Spanish Peninsula. There appeared from time to time, among these, observers of great patience and industry, but they never ascended from the simple recording of facts to the higher inductive generalizations which lead to the evolution of natural laws, or the foundations of truly philosophical theories. In Europe, until the universal acceptation of the Baconian system of philosophy swept away the errors of the schoolmen, and the obstructions they opposed to free intellectual progress, century after century rolled by, each with few exceptional intervals disclosing in its turn the same uninviting spectacle of physical research and laborious investigation, replaced by vain and empty verbal disquisitions on the nature of things, according to the view of the disputant; or declamatory vituperation of those who ventured in any respect to differ from the prevailing views of the Aristotelian philosophy.

Even during this darkest period in the history of science, men of more than usual intellectual vigour advocated in this war of words correct views concerning the nature of the physical sciences, and struggled to bring about a reformation in the method of studying them. Richard St. Victor, a learned theologian of the twelfth century, proclaimed that "physics discover causes from their effects, and effects from their causes." From this statement, brief as it is, we see that St. Victor had rightly apprehended the true relations to each other of induction and deduction in physical research, and the ends aimed at by it. "It would not be easy at the present day to give a better account of the objects of physical science."* The restless minds of many of the alchemists, notably Raymond Lully, in the thirteenth century, urged them to demand a reform, although their demand was not in many cases accompanied by any proposed new system which might have rendered a reform practicable.† Dr. Whewell

* Dr. Whewell's "Phil. of Ind. Sc."

† Ibid.

conceives the great faults of the middle ages to have consisted in indistinctness of ideas and the commentatorial spirit; at any rate, these are quite competent to have brought about the state of non-progression of physical science which is so characteristic of this period. The minds of the alchemists, even of Lully himself, were so greatly infected with these very faults as to disqualify them for the execution of any plan of reformers.

In the thirteenth century, however, an English Franciscan monk professed opinions wonderfully in advance of those current in his age—opinions which rendered him in every respect worthy to inaugurate a reformation in the methods and objects of natural science. Roger Bacon—Doctor Mirabilis, as he was not inaptly called by his contemporaries—enunciated with startling clearness, and advocated with forcible eloquence, sound views of the methods that should be adopted in the study of the natural sciences—views which were destined not to prevail until the time of Galileo and Lord Bacon. Roger Bacon promulgated, with a foresight almost prophetic, opinions that subsequently wrought a revolution in the world of natural science, at the very same time that "Thomas Aquinas was fashioning Aristotle's tenets into the fixed form which became the great impediment to scientific inquiry."* Speaking of the conditions hostile to the progress of human knowledge, he remarks: "Quatuor vero sunt maxima comprehendæ veritatis offendicula quæ omnem quemcunque sapientem impediunt, et vix aliquem permittunt ad verum titulum sapientiæ pervenire, viz. fragilis et indignæ auctoritatis exemplum, consuetudinis diuturnitas, vulgi sensus imperiti, et propriæ ignorantiæ occultatio cum ostentatione sapientiæ apparentis. His omnis homo involvitur, omnis status occupatur."† The course of study recommended by Roger Bacon embraces, firstly, the Holy Scriptures; secondly, mathematics and the use of experiment. In his "Pars Sexta" he vindicates the true dignity of experiment, enforces his opinion by arguments worthy of his great namesake, and illustrates the use of experiment by examples. He seems to have grasped the theory of induction almost as clearly as Lord Bacon himself, while in his application of the inductive method to the investigation and explanation of physical phenomena, he was much more successful. In the case of the rainbow, he gives a wonderfully good instance of the application of his method of investigation to the appearances of nature;‡ and, indeed, the subsequent explanation of this phenomenon was based upon facts of the kind observed by Roger Bacon. It would seem that the Doctor Mirabilis did not exert

* Dr. Whewell's "Phil. of Ind. Sc." † Dr. Jebb's edition of the "Opus Majus."
‡ "Op. Maj. Sext. Pars," caps. ii.—xii.

any very decided influence upon his age; in spite of his earnestness and his arguments, supported, as they were, by extensive learning, and, in some cases, conclusive experiment, the dogmatism of the schoolmen maintained an almost undisputed sway for three centuries more—that is, until the end of the sixteenth century.

Nearly simultaneously, Galileo in Italy, and Bacon in England—the one by experimental demonstration, the other by unanswerable argument—succeeded in reinstating the method of induction, based on experience, in its true position—that of foundation of physical science. From the commencement of this period of modern science, represented by such men as Galileo, Descartes, Bacon, and Newton, the limits of natural science have been greatly extended, fresh facts have been observed, and sound generalizations made with surprising rapidity. "So rapid was the career of discovery, so signal the triumph of the inductive philosophy, that a single generation and the efforts of a single mind sufficed for the establishment of the system of the universe on a basis never after to be shaken."* It is not necessary to dwell upon the history of physical science posterior to this epoch, in which the natural sciences other than astronomy and mechanics may be said to take their rise, and which inaugurates the present phase of scientific research.

In drawing this slight sketch of the progress of the study of the natural sciences, I have not aimed at narrating all, or even a large proportion, of the events which the history of the subject discloses, such an object being beyond the scope of this essay, but have rather endeavoured to render prominent the conditions and methods which, I conceive, have been favourable, or the reverse, to the true progress of philosophical knowledge and theory in the domain of the inductive sciences. I have done this, thinking that such a plan, if at all satisfactorily carried out, could not fail to throw great light upon the best means of studying these sciences, and might also, perhaps, enable us in some measure to estimate the true place of such studies in any educational system.

Education is threefold in nature: it is moral, religious, and intellectual. It is as a direct means of intellectual education only that the admission of the study of the natural sciences is advocated in this paper. But, besides its direct use as an intellectual discipline, the advantages indirectly obtained from this study, both in moral and religious education, are far from inconsiderable. Were the opposite of this the case, I imagine that very few indeed would be found to maintain the view

* Sir J. Herschel's "Discourse of the Study of Natural Philosophy."

that natural science should hold any place in a system even of purely intellectual education. It is, at any rate, certain that such a view could happily never obtain a general acceptance in the great centres of English education. The natural philosophers of modern times who have written on the subject of education have with singular unanimity expressed the opinion that the influence of natural science in moral education is extensive and beneficial. The formidable charge of antagonism to religion is now no longer brought against the study of natural philosophy—at least, with its former pertinacity and acrimony. It is reasonable to hope that it may soon be no longer urged at all. It is an accusation at once most painful to every naturalist of well-constituted mind, and indicative either of intense bigotry or extreme ignorance on the part of the accuser. It would indeed be a result anomalous and incomprehensible if the study of those very facts on which the advocates of natural religion so strongly rely for the support of their opinions, were in itself subversive of religion altogether. Sir J. Herschel, in his Discourse on the Study of Natural Philosophy, remarks on this very point: "Nothing, then, can be more unfounded than the objection which has been taken, *in limine*, by persons well-meaning, perhaps, certainly narrow-minded, against the study of natural philosophy, and, indeed, against all science—that it fosters in its cultivators an undue and overweening self-conceit, leads them to doubt the immortality of the soul, and to scoff at revealed religion. Its natural effect, we may confidently assert, on every well-constituted mind, is and must be the direct contrary. No doubt the testimony of natural reason, on whatever exercised, must of necessity stop short of those truths which it is the object of revelation to make known; but while it places the existence and principal attributes of a Deity on such grounds as to render doubt absurd and atheism ridiculous, it unquestionably opposes no natural or necessary obstacle to further progress; on the contrary, by cherishing, as a vital principle, an unbounded spirit of inquiry and ardency of expectation, it unfetters the mind from prejudices of every kind, and leaves it open and free to every impression of a higher nature which it is susceptible of receiving, guarding only against enthusiasm and self-deception by a habit of strict investigation, but encouraging rather than suppressing everything that can offer a prospect or a hope beyond the present obscure and unsatisfactory state."

Before proceeding to the discussion of the place which the study of natural science is entitled to hold in a well-arranged system of education, it will be expedient to inquire, and, so far as practicable, ascertain, what are the objects of an intellectual

training; for to this branch of education, in its widest sense, we have seen that this study belongs.

The object of education is to unfold and develop to the highest degree of excellence those faculties which are the common possession of all the members of our race—that is, the faculties of language and reason, according to these terms an extended signification. This mental discipline aims at qualifying the person submitted to it not only to derive keen satisfaction from the contemplation of the intellectual activity of his own and past times, and duly to appreciate the results of that activity in the promotion of the useful and luxurious arts, and in the production of works of standard literary merit, but also—this being, no doubt, the more important in the eyes of many students—to enable him to engage in the active business of after life with advantage and distinction. Any education which failed to do this would, *ipso facto*, be demonstrated to come short in a most essential particular, and would consequently cease to be an education in the widest and generally accepted meaning of the term. This comprehensive preliminary educational training is effected, not by instruction in the details and management of that one future career for which the student may be intended; such a course of instruction would be little better than an anticipation of the period of apprenticeage which is necessary in almost all cases before entering into the performance of those duties the execution of which gives use and dignity to adult existence: it would, at any rate, effectually do away with any such discipline as a liberal education at all.

This great ulterior object of education—the qualification of the adult to sustain with credit and success his part in the complicated circumstances and various vocations of life—is mostly attained by a discipline which enables him to acquire and apply to his own use the results of the labours of the great thinkers who have preceded him, and to derive profit from their stored-up experience; and which, further, by cultivating his reasoning power and developing a habit of patient investigation, brings his intellectual powers to such a state of efficiency that they shall, with the greatest advantage to their possessor, be able to guide him in the conduct of affairs in the ever-varying conditions in which he will of necessity find himself placed. The objects, therefore, of education are twofold. "It has two distinct ends to accomplish: namely, first, that of disciplining and developing the several powers of the mind; and, secondly, that of imparting to it certain kinds of useful general information." *

* Professor Daubeny's Lecture on Education, delivered before the Royal Institution in 1854.

It is usual — and perhaps just — to insist especially upon the greater advantages derived from the attainment of the former object. But there can be no doubt that any study which does discipline and develop the several powers of the mind, and at the same time impart to it useful general information, exhibits in so doing a singular fitness for admission into a system of liberal education, and should take a prominent place in it. Now, I think it would be difficult, nay, even impossible, to find any study which more amply fulfils both these conditions than that of the natural sciences. I should be very diffident of putting forward this view, did I not know that it is one very strongly held, I may say, by all the men of distinction in the natural sciences, both those who have risen to their present eminence without the advantage of a thorough classical and mathematical training (and who might be suspected of undue partiality for those lines of study and thought to which they have devoted themselves, and by which they have become famous), and also those who are entitled to speak with authority, as classical scholars or mathematicians, as well as natural philosophers.

The studies followed in a system of education have been divided into permanent and progressive. In the former are included the languages and literature of the two great nations of antiquity—the Greeks and Romans, the more synthetical parts of mathematics, and some very small portions of well-established sciences, almost entirely such as rest on mathematical proofs. To the latter belong modern literature and the sciences of comparatively recent date, to which additions are being now made day by day by the researches of our contemporaries; and the newer portion of those sciences which were first cultivated by the philosophers of antiquity. Both permanent and progressive studies should educe in due proportion the inductive and deductive faculties. The ratio borne by the cultivation of the inductive to that of the deductive faculty in educational systems will, of course, vary from age to age, according to the state of excellence exhibited by the knowledge of the time. In the classical world, when inductive sciences had scarcely arisen, the education was wholly deductive. The leading constituents of such an education were geometry and jurisprudence. The combination of these two sciences was as satisfactory a mental discipline as, perhaps, the deductive system can provide: the two studies are effectively supplementary the one to the other, the teachings of the one obviating the evil results that would naturally arise from the unchecked tendencies of the other. "Geometer and jurist, the pupil formed by this culture of the old

world, might make no bad figure among the men of letters or of science, the lawyers and the politicians of our own times." *

These elements of education which trained—and trained so excellently—the minds of the great men of antiquity, still maintain their place in our existing systems of mental culture. Together with the study of classics, they make up the usual permanent studies of a liberal education. Because, however, owing to the rapid extension of the sciences, and the increasing rigorousness of the inductions on which their generalizations rest, I claim for them admission not only into progressive but also into permanent studies, I do not in the least desire to undervalue the advantages of these older parts of education. I by no means wish to see their place usurped by these other newer departments of knowledge; nay, in the interests of the latter, I should deprecate such a change. But I do think that a pertinacious and exclusive adherence to the old educational methods is wholly incompatible with the enlarged views of modern times, and savours rather of bigotry and intolerance than of a wise and commendable conservatism. "Induction, rather than deduction, is the source of the great scientific truths which form the glory and fasten on them the admiration of modern times; and a modern education cannot be regarded as giving to the intellect that culture which the fulness of time and the treasures of knowledge now accumulated render suitable and necessary, except it convey to the mind an adequate appreciation of, and familiarity with, the *inductive* process, by which these treasures of knowledge have been obtained. As the best sciences which the ancient world framed supplied the best elements of intellectual education up to modern times, so the grand step by which, in modern times, science has sprung up into a magnitude and majesty far superior to her ancient dimensions, should exercise its influence upon modern education, and contribute its proper result to modern intellectual culture." †

There are reasons why classics and mathematics (especially the geometrical part of them) must always occupy the larger share of the earlier portions, at least, of the permanent studies of a general liberal education. In the first place, their teaching is deductive. Although in the extension of most modern sciences, and also in the more frequent trains of thought which, in active life, result in deliberate action, and embrace the two, induction precedes deduction; yet the latter is generally an operation so much more simple than induction, that it can be

* Lectures on Education, Royal Institution, 1854.
† Dr. Whewell's Lecture on Education, Royal Institution.

most readily and fitly cultivated in the earlier periods of mental training. These studies, again, while they constitute, themselves, a most valuable discipline, embody useful general learning, knowledge, and skill, in the application of which are absolutely essential in the prosecution, to any noteworthy extent, of the higher branches of inductive science; and not in this only, but also in the ordinary affairs of life. Another very strong argument in their support is derived from the historical interest which attaches to them. By them, as it were, the mind becomes associated with the intellectual labours of past ages, is enabled to appreciate the standards of literary excellence created by the cultivated minds of classic times, and to a certain extent, almost to share their mental triumphs.

Still, without the study of the natural sciences, any course of permanent education is defective. It is necessary to understand that there may be trains of argument, as conclusive as those of geometry itself, concerning the relations of events that fall within the cognizance of the different branches of physical or biological research, although the terms involved in these arguments, conveying as they do to the mind accustomed to such conceptions impressions perfectly distinct, may not be susceptible of a verbal definition, so exact as those given by geometers of the lines, angles, and other elements of their science. A rightly-conducted course of study in the natural sciences teaches that the due appreciation of the significance of such terms can only be obtained as the result of experience; hence follows the inculcation of a habit of carefully observing the phenomena, or things to which such terms are applied. Such a habit when once contracted in the case of the elements of natural science, is naturally extended to the various affairs of after life. It would not be at all difficult to adduce numerous examples of the ill effects due to the absence of such a training in the case of eminent men, whose education has been almost exclusively of the deductive kind. Probably lawyers and mathematicians are of all men, by their pursuits, most prone to take on trust the data concerning the combination of which they subsequently exercise their ingenuity. Accordingly we find that, among the educated classes, there are none which afford more supporters of, and believers in, the various illusions of a supernatural, or simply physical order, which from time to time spring up.

Professor Faraday, in speaking of the mental education derivable from the study of the natural sciences, lays great stress upon this tendency to develop the "judgment," which appears inherent in such pursuits. I do not at all wish to convey an impression that the study of mathematics, in some of its parts,

does not very largely develop this faculty. It does so, no doubt, but mostly in regions of abstract thought, far removed from the concerns of ordinary life, and therefore the faculty of judgment educed by this method of culture is not so likely to adapt itself to the commoner and less exalted occurrences of existence, as if it had been perfected in the school of natural research, where numerous facts are observed and collated, before any theoretical generalization can be based upon them, and where the judgment is constantly at work upon such generalizations to verify them by another equally numerous set of facts derived from all sources, even the most trivial, in the world around us.

This habit of first verifying data before proceeding in any way to combine them into systems, or to act upon them, is in itself most valuable throughout the subsequent life for which the student is prepared in education. It is a habit which although apparently simple, and possessing obvious advantages, is one not by any means readily acquired, and one which a glance on the surrounding world shows a very large proportion of men either never acquire at all, or not to any great extent. The want of such a custom of carefully investigating the facts, to opinions founded on which our assent is demanded, was lately, and is still, shown in a remarkable degree by the success of such an imposture as table-turning. Referring to such displays of credulity, Professor Daubeny of Oxford, in a pamphlet* published by him in 1853, remarks,—"My complaint, however, against the table-turners, is not so much that they should entertain any theory which may suggest itself to their minds, for the sake of accounting for phenomena, which, however considered, present without doubt a certain amount of difficulty; but that having adopted this or that hypothesis, they should have shown themselves so incompetent to carry on the experiment, which alone could substantiate it, or reconcile it to the laws of the agent which they begin by assuming."

The subjects usually included in the permanent studies of a system of education deal only with certainties. They leave no place for a balancing of opinion, or for an absolute reservation of it; they thus tend directly to foster the inclination, already very strong by nature, to proceed hastily to an affirmation or negation. The mind appears averse to remain in a state of suspense between the extremes of opinion; such a state is one of continuous effort. Nevertheless, the advantages of a judicial frame of mind are, in numerous circumstances, very striking. The power of forming a proportionate judgment, is one which acquaintance with the truths and methods of natural science

* "Can Physical Science obtain a Home in an English University?"

is well calculated to evoke and maintain. In natural science we become acquainted with various groups of important facts, concerning the existence of which, as facts, there can be no doubt whatever; when, however, we attempt the correlation and explanation of them, we frequently have to weigh the merits of rival hypotheses, each of which will fully account for all the phenomena hitherto observed. In such a case, we must reserve our judgment until the progress of research furnishes further evidence, which shall either lead us to form a proportionate judgment, or to give full acceptance to one or other of the different modes of explanation.

It may be urged that advantages, such as those I have affirmed will follow a training in natural science, are to be obtained only in original research, and are not possible results of so comparatively small an acquaintance with the subject which alone can be obtained during those years in which education, in its ordinary sense, can be conducted; that, in fact, the acquisition of such a knowledge of natural science is a mere task of memory, and therefore is not accompanied by the educational benefits which I have mentioned. This I take to be a fallacy in a twofold sense. If the student of natural science be so instructed, that the subject of his study be represented to him as a barren collection of facts to be stored in the memory, doubtless but slight educational benefit will accrue to him; but in this case the imperfect result is due to the inability or carelessness of the teacher, not to the science supposed to be taught. Again, the student is individually in the position of a discoverer; his attainments may be at any stage of his career very far below the existing level of the science in which he is working; but he is ascending to that level by the same gradual inductive method as those original workers who have raised the science to the point at which he finds it.

The late Professor Edward Forbes,* in his vindication of the claims of the study of natural science to be admitted among the usually recognised branches of education, expressed the following very just view of its relations to the other means of mental culture:

"The great defect of our systems of education is the neglect of the *educating* of the observing powers—a very distinct thing, be it noted, from scientific or industrial *instruction*. It is necessary to say this, since the confounding of the two is evident in many of the documents that have been published of late on these very important subjects. Many persons seem to fancy that the

* "On the Educational Uses of Museums (being the Introductory Lecture of the Session 1853-54, at the Royal School of Mines)."

elements that should constitute a sound and manly education are antagonistic—that the cultivation of taste through purely literary studies, and of reasoning through logic and mathematics, one or both, is opposed to the training in the equally important matter of observation through those sciences that are descriptive and experimental. Surely this is an error. Partisanship of the one or other method, or rather department, of mental training to the exclusion of the rest, is a narrow-minded and cramping view, from whatsoever point it be taken. Equal development and strengthening of all are required for the constitution of the complete mind, and it is full time that we should begin to do now what we ought to have done long ago."

I have endeavoured to show that the study of the natural sciences does exercise and train the reason as completely as the older permanent studies, while it develops the faculty of judgment and the powers of observation in a far higher degree. The natural sciences do, moreover, contain a body of exact knowledge which for a long course of years has already been possessed by the well-educated natural philosopher. The principal doctrines of the chemical, physical, and biological sciences are now as much integral portions of the permanent intellectual inheritance of this and future generations as the truths even of mathematics. They are intimately associated with the greatest intellectual triumphs of recent times, and with the rapid increase of the arts of civilized life. The nobility of the subjects discussed by the student of these sciences is not only unsurpassed but unequalled by that of any other kinds of human learning; for surely the operations of nature which manifest to the thoughtful investigator the laws by which the Deity sees fit to regulate the universe, and these laws themselves, are subjects of contemplation at least not inferior to the noblest exhibitions of human art or literary skill, to the laws which govern man's thoughts, or any systems of abstract ideas he may have built up for himself. On these grounds alone, the study of natural science should assume an honourable place among the permanent studies of any liberal education. But this study does pre-eminently achieve the second object which education should accomplish. While it, to the greatest extent, trains and disciplines the intellect, it more than any other means of mental culture, stores the mind with useful general information immediately applicable in many cases likely to occur to the exigencies and wants of every-day life.

We thus see that the study of natural science fulfils the two ends of every system of education. In the first place, it disciplines and develops the several powers of the mind; and in the second, it imparts to it certain kinds of useful general information.

In the more elementary portions of the permanent studies of an education, it will, I conceive, always remain expedient to allow classics and mathematics to predominate over, but not to exclude, the natural sciences. The considerations which induce me to hold this view I have already stated. In the higher parts of such permanent culture, however, it appears to me that the study of natural science should take a prominent share. Inasmuch as in this higher part most students have neither the opportunity nor the inclination to follow more than one line of study, I should, at this stage, allow natural science to assume a place of rightful equality with the older studies of classics and mathematics. Nor need such an arrangement be opposed by the supporters of the older methods of intellectual education, on the ground that it would materially lessen the number of those who distinguish themselves in classics and mathematics. The proportion of those among any great body of students who devote themselves to the higher parts of any educational course is never very large, and there is no reason to suppose that the number of young men who would study the higher branches of natural science would be at all larger, even under the most favourable circumstances, than the number of those who now compete for the higher honours in mathematics or classics; and it is likely that they would not be drawn from those who now pursue the classical or mathematical methods, but from those who, under the present conditions, never advance to the higher educational studies at all. Indeed, for very many years, until mental culture by means of natural science is more firmly rooted in our principal schools and colleges, and this study is as much stimulated by the prospect of possible emoluments or distinctions as classics and mathematics, the study of natural science must, in all probability, reckon fewer votaries than classics and mathematics. More prejudicial to the introduction of the study of natural science into the system of education usually adopted in this country, even than the four offendicula mentioned by Friar Bacon in his "Opus Majus," is the belief which has gained ground that this is an easy study, and one not so effectually calling into play the highest powers of the human mind as classics or mathematics. How this opinion can have originated, it is not at all easy to understand; it is one which can only be adopted by those wholly ignorant of the kind of learning they depreciate, or in consequence of the standard of excellence in this department erected by some so-styled school of natural science being far too low.

The discipline of natural science is one which requires the labour and attention of years on the part of the student who desires to reap the utmost advantage it is capable of bestowing.

It should be commenced early, for the habits of keen and cautious observation which it engenders, and on the acquirement of which its successful prosecution so greatly depends, can be inculcated with greatest facility in youth; at this period of life the natural bent of the mind seems towards studies in natural science. The groundlessness of the statement that such studies are in their nature easy, appears at once from the consideration that they have engaged the lifelong attention of many of the philosophers whose names are most illustrious in history.

If it be admitted, as I think it must be, that natural science should receive a very considerable share of the attention of students occupied in the permanent studies of a system of liberal education, there cannot well arise any opposition to its taking its place as one of the courses of progressive study for those whose ability and diligence lead them to seek the maximum benefit to be derived from an educational system. The objections urged against natural science as an educational method, are less applicable to the higher and more advanced, than to the lower parts of the subject. In these higher generalizations, it is no longer possible to speak of the study as a mere work of memory concerning unconnected facts and phenomena. By the processes of induction, starting with observation and experiment, the student of natural science rises from the first-discovered laws relating to small groups of physical facts, to generalizations of these into other natural laws of ever-widening applicability, and ultimately to the highest principles of his science—principles of the greatest simplicity and widest generality. The investigation of these ultimate principles, which is the most exalted aim of the philosophical student of the natural sciences, affords a method of the very highest intellectual culture. Since "in raising the higher scientific inductions, more scope is given to the exercise of pure reason than in slowly groping out our first results,"* the educational advantage of these studies increases with the extent to which they are prosecuted, and at the same time the mind of the student gains useful information of ever-increasing value and applicability in every-day life.

If it be true, as Dr. Whewell affirms, that in the permanent studies of education the mind is connected with the intellectual and literary triumphs of past ages by the study of standard works which have come down to us; and in the progressive studies it is associated with, and trained to find delight and interest in the mental activity of the present and the future, then, I think, the claim of the studies which form the subject of this essay, to an honourable position in any scheme of general education, are in-

* Sir J. Herschel's "Discourse on the Study of Natural Philosophy."

disputable. There is no question that the intellectual activity, specially characteristic of this age, manifests itself in the field of the natural sciences; and yet, forsooth, the opponents of all change in the existing educational system maintain that the study of these sciences alone ought to be excluded from playing any but the most ignoble part in the mental discipline of the time.

The recognition given to these pursuits by our old universities is very slight, and the prizes within the reach of natural science students scanty indeed, compared with the emoluments granted to those who exhibit excellence in the older studies of the Oxford or Cambridge course. In this respect, however, Oxford appears more liberal than the sister university; there are in the former a small number of purely natural science fellowships, while in Cambridge not one of the present fellows owes his position to proficiency in this pursuit alone. The result of the Cambridge system of only rewarding students of the physical sciences with scholarships tenable for a few years only, that is in most cases until the scholar takes his bachelor's degree, is that the undergraduates do not study pure science *per se*, but, as a rule, merely devote themselves to such departments of it as can be applied with most advantage to the subsequent prosecution of the medical profession. In thus acting, the university is not self-consistent; in her other schools she does not aim so much at explaining the way in which truths may be turned to financial account in the struggle for existence beyond her precincts, as in imparting a philosophical grasp of the truths themselves for their own sake. Why in this branch of her educational training only is utilitarianism allowed to triumph?

In treating the physical sciences so disrespectfully, the universities not only inflict injury upon them, and to some extent impede their progress, but also voluntarily forfeit no inconsiderable share of their own influence, and circumscribe their field of usefulness. Among the students at the universities there must always be a great amount of available talent and energy lying idle; this would be to some considerable extent lessened if the dignity and value of the studies that form the subject of this paper were more fully recognised. Many, no doubt, whose inclination does not prompt them to proceed to the highest parts of a mathematical or classical training, and who do not, consequently, receive the maximum advantages of an educational system, would in the natural science schools receive the benefits which the more advanced permanent and progressive university studies alone confer. The beneficial influence of the universities on

their own members themselves would thus be extended; while, at the same time, the spirit of something very like hostility that is beginning to appear in some of our distinguished physicists and biologists, to the old centres of education (in itself no small evil) would disappear.

"An university should by its very essence be *universal*, both as to the persons educated, and the studies pursued there. Nor should it be confined to the education of the youthful students; the maturer votary of learning or science should find a home and encouragement within its precincts, while a general education is prescribed to all; those requiring it should have every facility for making themselves acquainted with their future profession. There are branches of learning which are of immediate value in the instruction of the young; there are others which do not pay their own way, however important in the world at large. None of these should be unrepresented in the universities of the land, where there should be found a galaxy of talent both among the youthful and the maturer students, where every effort should be used to retain the service and promote the studies of those who are found capable of advancing science and learning."*

* "Observations on the Cambridge System," by A. H. Wratislaw, M.A.

NOTES FOR A HISTORY OF SANITARY LEGISLATION.

By Edwin Lankester, M.D., F.R.S.

IT was an early experience of mankind that certain external agencies produce disease and death, and amongst the earliest nations of antiquity certain practices were inculcated for the prevention of disease and securing health. In the books of Moses we have a surprising instance of the care which was taken to prevent disease by the inculcation of hygienic precepts, and the adoption of sanitary laws. Although these laws and precepts were part and parcel of the great religious system under which the Jews lived, and were superintended and enforced by the priests of that religion, there can be no doubt that one great end which they secured was the health of the people. Burdensome and unnecessary as some parts of the sanitary code of Moses might be regarded in countries like our own, they nevertheless, as a whole, comprise great principles of action, which it is somewhat astonishing should have been so entirely overlooked by the modern nations of Europe, who have for centuries regarded the mission and laws of Moses as divine.

In the distinction that is made between clean and unclean animals, although in some instances we cannot detect an objection on the score of the indigestibility or impurity of the animal, yet, on the whole, the creatures forbidden to be eaten belong to groups which are most objectionable in a sanitary point of view. The flesh generally of those animals which feed on others was forbidden, as the lion, the tiger, and the various forms of carnivorous birds, as the eagle, the vulture, the osprey, the swan, and others. Although mankind do not generally obey the law of Moses at the present day, they nevertheless instinctively avoid the flesh of such animals as food. Practically it is found that such flesh is liable to produce a condition of the blood which is unfavourable to health; it is also more liable to putrefactive changes, and this would be especially the case in hot countries. (Lev. ch. xi.)

The eating of blood was also forbidden, and this may be regarded as a wise precaution in hot climates; it was also connected with the physiological view, that in the blood is the life of the animal. These interdictions, having been repeated by the

early Christian teachers, have more or less influenced Christendom to the present day.

The regulations also enforced with regard to the secretions of the human body were such as to secure the greatest possible immunity from any diseases that might arise from a want of proper attention to cleanliness. Again, we find in the laws concerning leprosy which extended to the clothes and the houses of persons affected, that they were such as to secure the greatest possible immunity from the risk of contagion. These rules were probably applied to all forms of eruptive diseases, and there is no doubt that could the general principles involved in these laws be carried out at the present day, they would go far to prevent the spread of the various forms of zymotic disease to which mankind is at present liable. Instances are not wanting to show that even in our times, where Jewish communities carry out these parts of the ceremonial law, that they have exhibited a remarkable freedom from epidemic diseases.

In the directions given for the regulation of the camp (Deut. ch. xxiii., ver. 12), there is a remarkable direction given for disposing of human refuse. The Israelite is directed to bury in the soil immediately that matter, which, being allowed to accumulate in the towns and cities of modern Europe, has been the cause of widespread disease and death. Even in the special ordinance of circumcision there seems to have been a reference to sanitary requirements.

The practice of embalming the dead was one which prevented that speedy decomposition the neglect of which at the present day is a frequent cause of disease. The dead were also buried away from the living, and the practice of burning was not unfrequently had recourse to.

Many of these practices, however, are not exclusively Jewish, and some of the Oriental nations have carried into effect similar methods of securing the health of their teeming populations. We do not, however, find any sanitary code equally explicit with that of Moses amongst the nations of antiquity, unless we except the laws of Lycurgus, under which the Spartans lived, but which were peculiar, and especially adapted to the development of the military spirit amongst this nation of warriors.

The culture of the Greeks early led to the establishment of medicine as an art in the hands of the Asclepiadæ, who gave general directions for the prevention of disease to all who resorted to their temples of health for their advice. Amongst this class of men arose the great Hippocrates, whose works must be regarded as the first attempt to reduce to law the facts on which the art of preventing disease is founded.

Hippocrates not only wrote on the predisposing causes of

disease and the nature of epidemics, but we are told that his services were engaged to advise as to the best means of extinguishing the great plague of Athens. Whether this was the case or not, it is interesting to find that at this time there existed among the Greeks the impression that an application of remedial measures, as resulting from the observation of physical laws, might be the means of arresting plague. Thus it is stated that Hippocrates recommended during the existence of the plague in Athens the kindling great fires in the streets, by means of which the plague was stayed. This practice of lighting fires in districts affected with malaria is known to be of service at the present day, and its efficacy can be understood when we reflect on the fact that all morbid poisons are destroyed by heat, and that the heating of the atmosphere is one great means of disturbing that stillness of the air which has been always favourable to the spread of infectious diseases.

The work of Hippocrates "On Airs, Waters, and Places," is so important as to demand notice here. It is divided into six chapters. The first comprehends some general observations on the importance of cultivating a knowledge of the effects which the different seasons, the winds, the various kinds of water, the situation of cities, the nature of soils, and the modes of life exercise upon the health, and the necessity of a physician being acquainted with the details of these circumstances, if he would wish to practise his profession with success. It is in this part of his work he dwells more particularly upon what has been called the "constitution of the seasons," and the study of which was dwelt upon so much by Sydenham. The second chapter is more particularly devoted to the consideration of the influence of the various winds on health. We can truly say that no modern treatise has more accurate observation or wiser practical conclusions than this work of the great Greek master. The third chapter treats of water; and if we find here a deficiency of chemical knowledge, we still find the writer investigating according to his knowledge, and arriving at rational conclusions in opposition to the mere routine of the time. The fourth chapter treats of seasons, and enters not only on the consideration of particular seasons, but on the effects on the human body of successive seasons of the same or of varying characters. In the fifth chapter he deals with the great subject of the influence of social life and intellectual development on the appearance of disease. He here anticipates some of our modern writers on the history of civilization by pointing out the effects of the rich soil, and the calm and changeless climates of Asia on the habits and characters of its inhabitants. This subject is also pursued in the last chapter, in which the peculiarities of the European races

and their institutions are traced to the nature of the climate and soil of that part of the world.*

The work on Epidemics by Hippocrates is interesting from the fact that it dwells on the nature of those diseases that are produced by the epidemic constitution of the air. However instructive these works may be, they fail in the recognition of the distinct forms of fever, and in many of the cases mentioned we can only guess at the relation they have to our modern notions of the nature of disease. It is very evident that the idea of contagion never entered the mind of Hippocrates, nor had he any notion that the fevers he describes were the result of a special poison, or *materies morbi*.

Besides Hippocrates, Greek history gives us the names of other celebrated physicians whose services were secured by the State for the performance of public duties. Plato maintained that the commonwealth is not complete without the medical element, and argued that it was one of the first necessities of the Government to provide State physicians (εντεπολει ιατρους), who should be acquainted with the laws which govern health and disease.

The Greeks also cultivated gymnastics as a part of sanitary as well as medical discipline. It is true that the practice of gymnastics has been charged by several writers as having been abused both as a physical training and a cure of disease; but the practice clearly indicates a sense of the importance of exercise in maintaining health and removing disease. The Greeks also were in the habit of bathing. The principal cities contained public baths, which were open to all classes of the population.

In passing from Greece, we leave the brightest period of the history of our science behind. "The Romans," says Mr. Rumsey, "scouted the healing art, refused to recognise its prophylactic office, expelled the Greek medical philosophers, and reduced practitioners of medicine to a servile condition." † Under the first Cæsars, however, the medical office was more esteemed, and eventually public physicians were appointed to the principal towns of the empire. Speaking of these officers, Mr. Rumsey says that "they do not appear to have been debarred from private practice, although the object of their public appointments—the cure of the poor—for which they received yearly stipends, was made paramount. They were not permitted by the civil law to receive specific remuneration promised for cure during the alarm and peril of sickness; but they might be retained and their attendance secured under agreement by persons in good health." ‡

* The Genuine Works of Hippocrates, by Francis Adam, LL.D. (Sydenham Society.)

† Essays on State Medicine, p. 298.

‡ Ibid.

Amongst Roman writers who referred to the subject of public health, we may especially refer to Celsus, whose excellent treatise on medicine contains a large number of hygienic precepts, and a philosophical perception of the importance of the subject. In the conduct of their large armies, the Romans, on some points, paid great attention to the rules of public health. The sites of their camps have always been regarded as examples of the care that was taken to secure localities free from the influence of injurious exhalations from the soil; they were also particular about the supply of water to their soldiers, and inculcated the practice of bathing.

The remains of Roman architecture also show that the supply of pure water to towns was regarded as essential to the welfare of their inhabitants. The practice of bathing amongst them, which undoubtedly originated in the conviction of its value in relation to public health, became converted, in the later periods of the empire, into a luxurious indulgence, to which has been traced, in some measure, the effeminacy which characterised the race during its decadence.

In ancient Rome, the first attempts were made to remove the refuse of the city by means of arched ways under ground, which were called cloacæ, and which were the first artificial sewers of which we have any record. The cloacæ of Rome consisted of several branches, which ran in the low part between the hills; these branches fell into a very large main drain, called the cloaca maxima. This is said to have been built by Tarquinius Superbus. A portion of this cloaca is still visible near the arch of Janus. The arched drain of the cloaca maxima is fifteen feet wide and thirty high. Smaller drains of wood or clay intersected the city, and drain pipes issued from the houses and brought all the refuse into the main sewer. There is evidence to show that these drains and sewers were superintended with great vigilance and kept thoroughly clean. The superintendence of these cloacæ was at first under the direction of the censors, but this duty afterwards belonged to the ædiles. Eventually the emperor appointed the officers whose duty it was to look after the drainage of the city, under the name of "Curatores cloacum."

From the fall of the Roman Empire to the revival of letters in Europe we find little trace of sanitary legislation. Some remains of Roman medical legislation descended to the mediæval Western Empire, and the towns of Italy in the fifteenth century are said to have had their *medici condotte*. Such was the learned Veronese, Alexander Benedictus, who, after distinguished services in the army, was appointed to the public charge of Padua.

In the early part of the fifteenth century, the office of *meister-arzt* (chief doctor) was created by the Emperor Sigismund in every imperial city, with a salary from the ecclesiastical revenues, and a solemn charge to the person appointed to attend the poor gratuitously, and to earn his stipend by a zealous and faithful discharge of his duty. Nuremberg appointed a medical officer of health (*stadt-arzt*) in 1518, and the office was a general one in the free towns of Germany at the end of the sixteenth century. The duties of this officer were partly devoted to the prevention, and partly to the cure of disease. The *kreis-physicus* (district physician) of the present day is the descendant of the older officer. The duties of this officer at the present day, as given in Mr. Rumsey's work on "State Medicine," are—

"I. The general sanitary condition of his district.

"II. The medical treatment of the sick poor; in some States attending personally; in others (where the *kreis* is larger), inspecting the curative duties, the vaccination, &c., performed by the district surgeons—*land-ärzte* and *wund-ärzte*.

"III. Hospitals and houses of recovery, mineral baths, foundling and orphan institutions, poor-houses, prisons and houses of correction, schools and colleges, and police force, so far as relates to the hygiene of these establishments.

"IV. During epidemics and epizootics, the *kreis-physicus* is to furnish instructions for health-preservation, for attendance on the sick, and for general management, and to superintend their execution. In this department he is often aided by the surgeon (*kreis-wund-arzt*), and the veterinarian of the district (*kreisthier-arzt*). Although regarded as equal in official rank with the magistrate, or *landrath* of the *kreis*, he is to receive all necessary directions from him, and carry them into effect.

"V. He is to promote and aid medico-legal inquiries of all kinds. With the co-operation of the district surgeon, he is to make examinations for inquests, and to attend on all sudden occurrences dangerous to the public safety.

"VI. It is his special business to inspect and register medical men of all classes within his district, whether physicians, surgeons, apothecaries, or midwives, according to their respective qualifications and modes of practice. In some States he is to advance scientific medicine, by establishing a medical book society, either in his whole district solely, or in conjunction with a neighbouring *kreis-physicus*.

"VII. He is to visit the shops of apothecaries, and to inspect their drugs and preparations.

"VIII. He is carefully to notice the produce and sale of all articles of food, as far as health-police is concerned.

"IX. He is to report quarterly on the preceding matters; and, in addition, on medical topography, including meteorological observations, notices of natural phenomena, and changes in the organic world; on agricultural statistics; on the sickness or epidemic constitution of the period, with a summary of the cases attended by individual practitioners, and a particular notice of important events, such especially as affect medical-police; on quackery, irregular and novel practices of all kinds, incompetency of practitioners, and contravention of medical laws; and once yearly on the census of the population, with remarks on the returns of vital statistics." *

We now turn to France. As far back as the middle of the fourteenth century (1350), there was a health or sanitary police in Paris; and the depositions, which are still among the archives of France, testify of the insalubrity of the city, and of the efforts that were made to improve it. A century later (in 1486), when Paris became the seat of unwholesome trades, it became necessary to issue *ordonnances* for their management. Under the advice of a council of physicians and surgeons, the prevôt of Paris prohibited the potiers from having manufactories within the city, on account of the insalubrity of the smoke. In the same century the butchers, tanners, curriers, and dyers were subjected to sanitary regulations; and in 1668 there was a convocation of physicians at the instance of the lieutenant of police (Reyire), to deliberate on a sanitary question relative to the fabrication of bread.

Shortly afterwards the provinces imitated the example of Paris, and took measures for the protection of the public health. In 1692 there was an edict creating physicians expert jurists in all the cities of France, and from that time there were frequent consultations, at the instance of the Government, on matters connected with hygiene. M. Lenoir, one of the last of the lieutenants-general of police, who interested himself very much in the salubrity of Paris, habitually consulted two pharmaciens, Pia and Cadet de Vaux, on questions of salubrity. The first of these pharmaciens founded the establishment for the recovery of the drowned and asphyxiated, and the second took the title of inspector-general of salubrity. This was in 1774. Soon afterwards the Royal Society of Medicine was founded. It brought to the assistance of the State a competent

* Rumsey. Essays on State Medicine. 1856.

council, which furnished many valuable reports on sanitary questions of great importance.

Then it was that the authorities perceived the necessity for creating a national Council of Hygiene, and in 1802, the first préfet of police, M. Dubois, established the "Conseil de Salubrité." He nominated Deguet, Parmentier, Hugard, and Cadet Gassicourt the first members, and deputed them to examine, visit, and report on drinks, epizootics, manufactories, workshops, &c., in Paris and the rural communes of the Seine. Other members connected with the School of Medicine were shortly after associated with them, and their duties were considerably increased. In 1807, when they received a new organization, the number of members were seven, and their duties were the treatment of epidemics, the examination of markets, rivers, cemeteries, slaughter-houses, filth depôts, dissecting rooms, cesspools, emptying of privies, cleansing of sewers, public baths, depôts of mineral waters, &c. For many years the constitution and functions of the Council remained the same, and its annual reports were continued to the medical police of Paris, but gradually the Council extended its sphere of action and took cognizance of public works, and offered advice on the sanitary condition of the army and navy. Then it was that its organization was enlarged, and the official engineers of Paris and the chief surgeon of the army were added to the Council. By a decree of 1848, the advantages of the institution were extended to the provinces of France, and each department had its Council of Public Health. Lyons, Marseilles, Lille, Rouen, Bourdeaux, Nantes, and some other cities rivalled each other in the energy with which they pursued their sanitary labours. Other cities, however, were not so zealous in the conduct of their affairs, and thus there was a disjointed set of operations; in fact, the reports of different arrondissements were characterised by the different views which were taken of local questions of hygiene. It was, therefore, found necessary to bring them into some order, by placing them under the direction of a superior Council of Hygiene. This was done in 1851, and the central council was brought into relation with the Minister of Agriculture and Commerce through the agency of the Préfet of Police. Its special duty is to co-ordinate all the materials furnished by the sanitary councils and commissions of departments, in order that they might serve for the preparation of legislative reform relating to the public health, and thus bring the laws into harmony with the wants of the population and the progress of science. This body, however, is entirely consultative, and has little or no executive power. In fact, although its range of inquiry is large, its prac-

tical utility is but small. Nevertheless, it is untiring in its investigations, and its reports are full of the most interesting facts of public hygiene. Many volumes have been edited by MM. Parent du Chatetet and Marc, and very recently the secretary of the Council, M. Trabuchet, has presented a general report on the works and proceedings of the Council for ten years, viz., from 1849 to 1858 inclusive. It is upon these reports and proceedings that the *ordonnances* of police in France are based, and thus, although the numbers of the Council of Public Health are not invested with executive power, they are indirectly the means of great public usefulness.

The decree of December 15, 1851, contains the following instructions:

Art. 1. The Council of Salubrity established near the Prefecture of Police preserves its actual organization; it will take the title of *Conseil d'Hygiène Publique et de Salubrité du Départements de la Seine.*

The nomination of the members of the Council of Public Hygiene and of Salubrity will continue to be made by the Préfet of Police, and to be submitted to the approbation of the Minister of Agriculture and Commerce.

Art. 2. It will be charged in this quality throughout the jurisdiction of the Prefecture of Police, with the instructions mentioned in Articles 9, 10, and 12 of the resolution of December 18, 1848.

Art. 3. It will establish in each of the arrondissements of the city of Paris, and in each of the arrondissements of Sceaux and St. Denis, a commission of Hygiene and Salubrity composed of nine members, and presided over in Paris by the Mayor of the arrondissement, and in each of the rural arrondissements by the sub-préfet.

The members of these commissions will be named by the Préfet of Police from a list of three candidates presented for each place by the Mayor of the arrondissement in Paris and by the sub-préfets of Sceaux and St. Denis in the rural arrondissements.

The candidates will be chosen from the notable inhabitants of the arrondissement. In each commission there will be always two physicians at least, one pharmacien, one qualified veterinary surgeon, one architect, and one engineer.

If there be no candidates in the last three professions, the choice will be given by preference to mechanicians and directors of workshops and manufactories. The members of the Commission of Public Hygiene for the department of the Seine

are named for six years, and a third of them will retire yearly, but the members can be re-elected.

There will be established for the three communes of St. Cloud, Sèvres, and Meudon, annexed to the department of the Prefecture of Police, by the resolution of the 3rd brumaire, year IX., a central commission of Hygiene and Salubrity, which will be presided over by the senior Mayor of the Commune, and the sitting will take place at the residence of the president. All the preceding instructions will be applicable to this commission.

Art. 4. The commission referred to in the last paragraph of the preceding article, and each of the commissioners of Hygiene for the arrondissements, are to elect a vice-president and a secretary, who will be renewed every second year.

The Préfet of Police may, when he considers it necessary, delegate one of the members of the Council of Public Hygiene of the department with each of the beforesaid commissioners, to take part in its deliberations with a consultative voice.

Art. 5. The Commissions of Public Hygiene and Salubrity are to meet at least once a month at the Marie, or at the chief place of the sub-prefecture, or for that which concerns the central commission of the communes of St. Cloud, Sèvres and Meudon, at the marie of the residence of its president, and they will be invoked extraordinarily whenever there is occasion for it.

Art. 6. The Commissioners of Hygiene are to receive all information which relates to the public health within the area of their jurisdiction.

Each is to direct the attention of the Préfet of Police to the causes of insalubrity which exist in their respective arrondissements, and they are to give their advice as to the means of remedying them.

They may be consulted at the instance of the Council of Public Hygiene and Salubrity of the department, in the matters referred to in the 9th Article of the Government resolution of the 18th December, 1848.

They are to assist in the execution of the law of the 13th April, 1850, relative to the cleaning of insalubrious dwellings, either by promoting, when necessary in the rural arrondissements, the nomination of special commissions, which can be created by the municipal council in virtue of the 1st Article of the law, or by signifying to commissions already instituted the dwellings which are known to be insalubrious.

In case of epidemic diseases, they will be called to take part in

the execution of extraordinary measures ordered for the checking of the diseases, or for the providing of prompt assistance to the persons attacked.

Art. 7. The Commissions of Public Hygiene and Salubrity are to collect the documents relative to mortality and its causes, the topography and the statutes of the arrondissements in so far as they concern the public health.

These documents are to be transmitted to the Préfet of Police and communicated to the Council of Public Hygiene, which is charged to co-ordinate to make complete when necessary, and to summarise them in their reports, according to the form and mode of publication hereafter to be determined on.

Art. 8. The Council of Hygiene and Salubrity of the department of the Seine will make a general report every year on its own labours, and on those of the commissions of the arrondissements, and will transmit it by the Préfet of Police to the Minister of Agriculture and of Commerce.

Art. 9. The Minister of Agriculture and of Commerce is charged with the execution of the present decree.

Articles 9, 10 and 12 of the resolution of the 18th December, 1848, concerning the organization and functions of the Councils of Public Hygiene and Salubrity, referred to in the preceding decree, are as follows.

The Councils of Hygiene of the arrondissements are charged to examine questions relative to the public health of the arrondissements referred to them by the préfet or sub-préfet. They may be especially consulted on the following subjects:

1. The cleansing of localities and habitations.
2. The measures to be taken to combat and prevent epidemic, endemic, and contagious maladies.
3. The epizootic and diseases of animals.
4. The propagation of vaccination.
5. The organization and distribution of medical aid to the indigent sick.
6. The means to ameliorate the sanitary condition of the industrial and agricultural populations.
7. The salubrity of workshops, schools, hospitals, almshouses, barracks, arsenals, prisons, depôts of mendicants, asylums, &c.
8. The questions relative to foundlings.
9. The quality of food, drinks, condiments, and medicaments found in commerce.
10. The improvement of establishments of mineral waters belonging to the State, to departments, to communes, and to in-

dividuals, and the means of rendering the use of them accessible to poor sick persons.

11. The order relating to the authorization, removal, or interdiction of dangerous, insalubrious, or incommodious establishments.

12. The great works of public utility, as the construction of edifices, schools, prisons, barracks, harbours, canals, reservoirs, fountains, markets, sewers, cemeteries, the public way, &c. in their relation to public hygiene.

Art. 10. The Councils of Public Hygiene of the arrondissements will collate and co-ordinate the documents relative to mortality and its causes, to the topography and the statistics of the arrondissements in so far as they relate to the public health.

They are to address regularly their documents to the Préfet, who will transmit a copy to the Minister of Commerce.

Art. 12. The Council of Public Hygiene and Salubrity of the department will have for its mission to give advice—

1. On all questions of public hygiene, which will be submitted to them by the Préfet.

2. On the questions common to many arrondissements, or relative to the department itself.

It will be charged to condense and co-ordinate, at the instance of the Préfet, the labours of the councils of the arrondissements. It will make a general report to the Préfet every year of the labours of the councils of the arrondissements.

That report will be immediately transmitted by the Préfet, together with the documents on which it is founded, to the Minister of Commerce.

ON THE STUDY OF CHILDREN.

The Acquisition of Language: The Relation of Natural Sounds to the Musical Scale.

By William Rushton, M.A., Professor of History and English Literature, Queen's College, Cork.

We saw, in a former number of this Journal, that one of the most surprising developments in the life of a young child is the acquisition of the mother tongue, and that most instructive lessons may be derived by watching the progress of children from their earliest efforts to the time when they can speak with facility.

But it is well to study man as a part of nature; not as a being isolated from the creation in general, but as a manifestation, however noble, of organised life. The mere naturalist is too often disposed to consider nature, without reference to man; while the mere moralist is apt to regard man as distinct from nature. Hence, the views on both sides are frequently partial; whereas we should endeavour to combine both aspects of the case. Indeed, the very term *human nature* implies that man is a portion of nature.

Although the gift of speech in its perfection is the distinctive glory of man, yet the earliest sounds uttered by the infant must be viewed in a wider relation, namely, the relation of natural sounds and cries to the musical scale. For in comparing natural sounds, it is necessary to have some standard of comparison, and the musical scale seems more suitable than any other.

It is curious to remark that this subject has not escaped the attention of Shakespeare, who appears to have had an ear as well as an eye for all natural manifestations. In his "Midsummer Night's Dream," iv. 1, Hippolyta says:

> I was with Hercules and Cadmus once,
> When in a wood of Crete they bay'd the bear
> With hounds of Sparta; never did I hear
> Such *gallant chiding*; for, besides the groves,
> The skies, the fountains, every region near
> Seem'd all *one mutual cry*; I never heard
> So *musical a discord*, such sweet thunder.

Theseus replies:

> My hounds are bred out of the Spartan kind,
> So flew'd, so sanded, and their heads are hung
> With ears that sweep away the morning dew;
> Crook-knee'd and dewlapp'd like Thessalian bulls;
> Slow in pursuit, but *matched in mouth* like *bells*,
> *Each under each.* A *cry* more *tuneable*
> Was never holla'd to, nor cheered with horn,
> In Crete, in Sparta, nor in Thessaly:
> Judge when you hear.

There is reason to suppose that the effect here described is the result of education. For if we may credit Gardiner ("Music of Nature," Longmans, 1832), dogs in a state of nature never bark, they simply whine, howl, and growl. Sonnini speaks of the shepherds' dogs in the wilds of Egypt as not having this faculty; and Columbus found the dogs which he had previously carried to America to have lost this power (p. 199).

The notes of birds furnish material for an extensive and intricate study. Mr. Gardiner has given, in musical notation, the strains of the nightingale, the canary, and some others; but on this part of the subject much remains to be done. As he says (p. 228), persons who have not attended to the notes of birds, suppose that every one of the same species sing the same song; but although there is a general resemblance, many varieties may be noticed. Thus, the London bird-catchers prefer the song of the Kentish goldfinches, the Essex chaffinches, and the Surrey nightingales, to those of Middlesex.

The crowing of the cock is a familiar sound, and the well-known phrase descriptive of the utterance, pretty nearly represents the rhythm of the strain. But more technically, it is said to consist of five notes, generally in the key of B major, a key of five sharps:

Fá sĭ, sí lă sí.

It is stated that when Bonaparte returned from Elba, the crowing of the cocks was taken by his admirers as a certain omen of his regaining the throne; and such was the enthusiasm of his followers, that they fancied they heard every cock distinctly shout,

Ví-vĕ l'Ém-pĕ-reúr.

Whether this anecdote be true or not, the phrase correctly represents the rhythm.

The note of the "cuckoo" has given a name to the bird in

many languages: Lat. *cŭcūlus*, Fr. *coucou*, Ger. *kuckuk;* and almost equally well known is the "pee-wit" of the plover, who, roused from her sedgy bank, tumbles in the air with awkward flight, and by her piteous cry wheedles the fowler from the haunt of her young.

The loquacious magpie and the chattering jay make a still nearer approach to vocal sounds; and the anecdotes recorded of parrots almost exceed belief. "A most remarkable instance," says Mr. Gardiner, p. 234, "I met with at Mr. Braham's villa in Brompton. A lady, who had great admiration for his talents, presented him with a parrot, on which she had bestowed great pains in teaching it to talk. After dinner, during a pause in the conversation, I was startled by a voice from one corner of the room calling out in a strong, hearty manner, 'Come, Braham, give us a song!' Nothing could exceed the surprise and admiration of the company. The request being repeated, and not answered, the parrot struck up the first verse of '*God save the King*,' in a clear, warbling tone, aiming at the style of the singer, and sang it through."

The sounds produced by insects do not proceed, as a general rule, from vocal organs, but by rubbing their legs together, or by the motion of their wings. If we watch the house-fly, we shall soon be convinced that he is destitute of voice, and that the noise proceeds from his wings; since, when at rest, he is always silent. The sound made by the house-fly is invariably, says Mr. Gardiner, upon the note F in the first space of the treble clef; and the hum of the honey-bee is the same. That of the large humble-bee is just an octave lower; while the drone of the cockchafer, as he wheels along "in drowsy hum," is an octave lower still, on F below the line of the bass clef.

The sound produced by the *fanners* in a hive, whose business it is to keep up a tremulous motion with their wings, and to ventilate the hive, is found to be in the key of F major. And then Mr. Gardiner, who seems to be somewhat of a wag, makes the following comparison: "The writer was once placed in the gallery of the Royal Exchange, to view that hive of money-collectors in the court below. Besides the similarity of the scene, he could not but notice the similarity of sound, the buzz of the two thousand voices being perceptibly amalgamated into the key of F" (p. 250).

A minute examination of the tones uttered by the wind, by various animals, in the songs of birds, and in the sounds produced by insects, might occupy a lifetime; but there is one broad distinction, which a musical ear can readily make, namely, that of the major and minor modes. In a general way, the

major is cheerful and the minor is plaintive; though there are exceptions on both sides. The flat keys of the major are often employed to express tenderness; while the comic minor sometimes represents humorous distress or rueful sorrow. I have observed, in particular, that the key of B minor (two sharps) is sometimes employed in the latter instance; and a musician told me that this key is often selected in musical pantomimes for the part of harlequin, who generally falls into some woeful disaster.

We may remark that the wind blusters in the major, but howls in the minor; and perhaps there is no sound in nature more dismal than the howl of the wind through fir-trees, on a dark November evening; it is like the dirge of the departing year. Similarly, a dog whines in the minor; but a cock crows lustily in the major. In like manner, to come nearer to our subject, a child coos in the major, but squalls in the minor.

I know not whether the early cries of children proclaim their entrance into a vale of tears; but certainly the earliest notes are in the minor scale, ascending from the tonic to the minor third, or descending from the minor third to the tonic. The utterance is generally *â*, like the Italian sound of the vowel; but often, at a very early age, exhibiting the sound *lâ*. Sometimes I have observed a sound between *â* and *lâ*, occasionally approaching *yâ*, and at other times nearer to *râ*.

When a child is in pain, or in any way disturbed, the voice dwells painfully upon the minor third; and this iteration of the minor third is peculiarly distressing to the ear. It "serves in the office" of a bell, to call attention to the wants of the child, and brooks no delay. Not only is the voice of man endowed with purity of tone, in a higher degree than that of any of the vocal animals, but it is estimated that children possess a power of voice, in proportion to their size, ten times greater than that of an adult. In a state of nature, this serves them as a defence, if it be true that infants have, by their screams, alarmed and kept off the attacks of furious animals.

These points are not difficult to understand; but why the minor third should be so painful, while the major third, only a semitone higher, produces such a different effect, is not so easy to explain. When we go a little below the surface, and ask for the "why" of the "why," we soon come to a standstill. Medical men know that one drug causes sleep, and that another promotes perspiration; and they term the one an "opiate," the other a "diaphoretic;" but when they are asked to explain the causes, or the manner of operation, they look as wise as the physician in Molière, who said, "*L'opium endormit, parcequ'il à une vertu soporifique.*"

It is exceedingly difficult to draw the line between cries which are merely animal, and sounds which may be termed articulate. We have seen that many animals possess, in a greater or less degree, the power of making known their sensations by means of inarticulate sounds or cries. The *cry* may be considered as the universal language of the animal creation. It seems to be purely instinctive; it differs in every species, and belongs to the specific organization.

According to the view taken by Dr. James Hunt ("Philosophy of Voice and Speech," Longmans, 1859), we are to understand by articulation, the modification which the vocal sounds undergo by means of the organs placed *above* the larynx, including the lips, the teeth, the nose, &c.

That the larynx is the instrument for the *production* of vocal sounds, appears evident from the fact, that if a sufficiently large aperture be made in the trachea of an animal *beneath* the larynx, the voice is lost; but if it be made *above* the larynx, the voice continues. Many cases are recorded of persons who, from fistulous openings in the trachea, were unable to speak, unless the apertures were stopped by mechanical appliances.

Hence it would seem, that the voice is produced in the larynx, the trachea acting chiefly as a *porte-vent*, to convey air to the glottis; that the inferior vocal chords constitute the essential organ of the voice; and that the superadded tube, comprising all the parts and passages above the glottis, merely modifies the sounds which are produced in the glottis.

But, after all, so difficult it is to define what articulation really means; so flexible is the voice of the child, and so gradual is the transition from one quality of tone to another, that it would puzzle a jury of philologists to lay down the law in this matter. Yet, perhaps, some light could be thrown upon the subject, if another difficult question were solved. There is a time, at which the child first becomes conscious of uttering sounds, and appears to take pleasure in the exercise of its new powers. This is quite distinct from the notion of attaching any signification whatever to the sounds; it is merely the consciousness of uttering a tone, and exerting a pleasing effort. Now it would be very interesting, and it might be useful, to inquire, whether articulation and conscious utterance are at all coincident in point of time; and whether the one bears any relation to the other.

Either Goethe or Jean Paul says somewhere, that no *anmuth* is comparable to the smile of a young child. It is not easy to render this term into English: the word "grace," given in some dictionaries, is hardly near enough. It is literally "on-mood," and denotes that "geniality of soul," which takes pleasure in

every thing and every body. The same root appears in *gemüthlich*, which signifies "full of good feeling." Now it is true, that these characteristics are seen in children of a certain age; but it is equally true, that very young infants rarely smile. Some never smile for weeks; others not for months; but I have sometimes thought that the first smile looks like the ray of dawning intelligence. And it will be found, I believe, that the sound which first betokens satisfaction is *oo*, from which we seem to have derived the word *coo*, a term also used to represent the notes uttered by doves.

There is a period of transition, during which, observers may differ in opinion, whether a child actually knows when it utters this, or any other sound; but again, a period arrives when the child is evidently "trying to talk;" when, as a nurse remarked, "it looks in your face, and is pleased."

In a future paper, we shall consider the transition period, and the commencement of conscious utterance.

A FEW THOUGHTS CONCERNING INFANTICIDE.

By Mrs. M. A. Baines.

ONE cause of the increase of infanticide is the indifference with which it has been regarded by the police and the public. I do not include in this censure the press, for I differ from the opinion on that point recently expressed by a worthy coroner. It is only right to say that a laudable zeal has, with rare exceptions, been manifested by the press in reporting cases, and in commenting severely upon the frequency and enormity of the crime.

It has been said of the police, with too much truth, that they think no more of finding the dead body of a child in the street than of picking up a dead cat or dog. The frequency of the occurrence familiarises the public mind to the offence, instead of rendering it still more revolting. That such a state of things can be regarded with indifference in our day, is a proof of the low estimate which is placed upon the value and sacredness of infant life; and this is one explanation of the prevalence of the crime which is under consideration. I would suggest, as a means of stirring up some inquiry in the matter, that a reward should be offered for the detection of the perpetrators in every case where now an open verdict of "Found Dead" seems—inconsistently enough—to close all further proceedings in the matter.

It is true that within the last few months public attention has been aroused from its wonted unconcern, and a more healthy feeling is astir. Some very glaring instances having been made prominent, we are beginning to open our eyes and to ask ourselves whether it is not time to attack the evil, which is becoming a national disgrace; and, by rallying together the philanthropic forces of the country into something like national co-operation, make a determined effort to deal with that which we must no longer refuse to regard as the crying sin of our age. The feeling that is prevalent just now on the subject is encouraging, and should be turned to some practical account.

PUBLIC OPINION is necessary in order to carry out any great measure of social reform, but "public opinion," to effect any good in this, as in any other matter upon which it may legitimately be brought to bear, must be reasonable and consistent; it must not regard "child-murder" to-day as a great crime, and to-morrow (under circumstances of similar atrocity) as no crime at all. Such conflicting popular verdicts are very injurious to public morals.

There should be more uniformity in the sentences, and more certainty in carrying them out in all cases in which "wilful murder" can be proved; *and it ought to be proved when possible.* Medical men have great responsibility in this matter; their duty, in cases of the kind, is not to assist the escape of a criminal, but to further the ends of justice by a conscientious interpretation of the facts submitted to them. The counsel for the accused mostly puts questions to a medical witness suggestive of reasons for an acquittal, and we all know how often the answers thus elicited are at variance with the medical facts of the case. It would be well if medical men, when called upon for an opinion, would, instead of availing themselves of a legal quibble, state the case *as they find it*, and where stabs or other injuries have been inflicted which could not have occurred accidentally, the common-sense conclusion is that murder has been committed; for if a child be born dead, as it is the object to prove, what reason would there be to cut and maim in order to take away life? These are considerations which must ere long have more weight than they have had in coroners' courts of inquiry, and in other courts to which such cases are sometimes transferred.

I would, in passing, say a few words in favour of the election of coroners from the medical profession. We have one or two exemplary instances of the wisdom of such a choice, and the interests of the community would be better promoted were the plan adopted more generally. It is especially important in cases of "infanticide," that those who preside over such inquiries should

possess the discriminating knowledge which a medical education imparts. There is always some degree of obscurity as to the precise cause of death in cases of child-murder—at least, it is mostly attempted to mystify the matter by conflicting statements, and it is very important that those who sit in judgment upon such inquests should be medically qualified to elucidate the truth.

An example here and there of a conviction and a just punishment following upon the perpetration of the crime in cases where there has been *an undoubted design to kill*, would tend more than anything else to check the frequency of infanticide. It increases on account of the facilities that exist for its concealment, and because, when discovered, if punishment follow at all, it is of the lightest description that it is possible to inflict.

As to the remission of "sentence of death," and the substitution of some secondary penalty for child-murder, I can only say that it is to be hoped, as long as "capital punishment" remains on the statute-book at all, the law may not be made exceptional in favour of the Infanticide. Such a change would be as inconsistent as dangerous; the effect would be to lower the value of infant life still further in the estimation of the public—that portion of the public most concerned in the matter—and it cannot be too strongly insisted upon that the taking away of life, whether of an infant or an adult, is MURDER in the sight of God; and perhaps the more heinous crime of the two is the laying violent hands upon a little child—an act all the more cowardly and cruel, on account of the helpless and inoffensive condition of the victim.

There is some reason to fear lest public feeling in this matter may, in the usual impulsive way, rush from one extreme into another. Hitherto the misguided, erring woman has been compelled to bear the whole of the burthen and obloquy, while the partner of her sin has enjoyed all but complete immunity, not only from its legal penalty, but from his own share of the censure which society has so unmercifully pronounced upon her; and because this is felt to be such a manifest wrong, the law has been hoodwinked, and justice defeated; no one therefore is held responsible, no one is punishable; and the present state of things is the consequence. Now, however, "society," seeing the effects of its own inconsistencies, takes alarm, and is in danger of running into the other extreme; to satisfy its conscience, it seems ready to bestow an undue amount of sympathy upon her whom it has doubly wronged; the scale is now to be turned, and all the weight is to be brought to bear upon the other side. *The result will not be satisfactory*; any law that

presses unduly upon either party will be evaded, and must ultimately become inoperative. Why cannot a middle course be found? Why not *both* bear their own proper share of the penalty, legal and social?

One or two suggestions of a preventive or precautionary kind may be mentioned here; abuses have crept into some recognised systems which require to be investigated—BURIAL CLUBS, for instance; it is a common occurrence for one infant to be entered "on the books" of several clubs; thus the parents have a direct interest in the death of the child. Then the registration of STILL BIRTHS would be another important step; medical certificates should be required in all cases of the kind, and more stringent regulations should be incorporated into the Burial Act, with reference to the interment of "still-born" children.

Women who act as MIDWIVES to the poor, should be compelled to take out a license—even at a small fee—in order that they might be placed under authoritative supervision.

All persons, whether as "wet nurses" or "dry nurses," who obtain a living by taking infants to nurse, should be registered, and a sanitary inspector should occasionally visit such nurseries.

Many of the cases which come before a coroner, of infant deaths from "SUFFOCATION," are, to say the least, extremely suspicious; in these, as well as in "DEATHS BY BURNING," where culpable negligence is obviously the cause of the fatal result, a verdict of "manslaughter" against the persons concerned would place a decided check upon such so-called "accidents" in future.

The principal suggestion which I have to make, however, is of a palliative kind: it refers to a point which, strangely enough, seems to have been entirely overlooked by those who have undertaken to discuss this subject. FOUNDLING HOSPITALS have naturally been brought into the controversy. The system of course has few advocates; the objections to such receptacles are twofold: 1st. The high rate of infant-mortality which prevails in institutions of the kind, where large numbers of children are congregated together under one roof; 2nd. The facilities offered to mothers for getting rid of their offspring, and the more than probable encouragement thus given, though indirectly, to immorality.

Now, although such evil results of the Foundling system are acknowledged, it does not appear to have occurred to any one to account for them. It seems to me that the SEPARATION OF MOTHER AND CHILD is the cause of the ill success which generally attends undertakings of the kind; and this is the reason, BECAUSE THE MATERNAL ELEMENT IS THUS ENTIRELY IGNORED.

In consequence of such a separation, the child, on the one hand, loses its natural nourishment, which would afford it the best chance of maintaining existence; and, on the other hand, the woman is deprived of those softening influences upon her nature, that the care and nurture of her own child would impart to her, and which might be relied on in the great majority of cases, as a means of holding her in a virtuous course of life for the future; a result which can scarcely be looked for in those women, who, by force or choice, are relieved entirely from the duties and responsibilities of their maternity.

An institution of the kind which I am describing might combine the advantages of REFUGE, LYING-IN HOSPITAL, and NURSERY; the various departments of household work, such as cooking, cleaning, laundry, and needle-work, with nursing, would usefully employ the inmates, and would, moreover, form part of the necessary discipline.

In the majority of these unhappy cases, it is the desire to free herself from an encumbrance, which is in the way of her future employment, that prompts the wretched mother to take the life of her child; if therefore we can help her to bear the burthen, while placing her in the way of gaining an honest livelihood, we shall do her a greater kindness than can be done by any other means, and we likewise promote a social good; for this plan is certainly not open to the charge of offering a premium to vice, or of encouraging immorality. By combining the well-being of the infant with the reform and training of the mother, we may reach the most desired objects in the shortest and most efficient way.

It is a mistake to suppose that SHAME prompts the woman to commit the crime; in the majority of cases, there is no feeling of the kind in the matter. We have but to look at the advertisements in the columns of "want places" in the *Times*, in proof of this statement; we shall find that women offer themselves for the occupation of "wet nurse," and state that they are "single," apparently as an additional recommendation. If it indeed be so —if unmarried mothers are preferred for the office — then mothers of another rank are not altogether blameless in the matter. This is one of the many questions which "society" has to answer, in relation to this painfully interesting subject.

It has been said that ladies should keep aloof from this topic; but it seems to me that, as wives, mothers, and mistresses of families, they are most deeply concerned, and that they may, in their quiet womanly way, do more good in their *home* and in their *circle*, than can be done by all the talk at all the meetings that can be held.

Women in the higher walks of life have a duty to perform in

this matter, which they have not yet fully recognised; the mothers of England must unite as with one voice to cry down the evil—the sin of the day; they must set themselves to the task with a will; they must look at the whole subject bravely, though sadly,—as a TRUE-HEARTED WOMAN can and may contemplate it,—with sentiments which none need condemn; with mingled feelings of condescending pity and high-minded discontent, which may find expression in a tear of sorrow for her erring sister, and a sigh of sympathy for herself. These are considerations not to be lightly regarded by either sex; but I pass on to a more practical view of the subject.

What has to be thought of in the present state of the case is this, how we can prevent the fall of the innocent into the snares of the wily? and when, unhappily, the false step is taken, how we can raise up the fallen, and place them in a better way for the future?

But private benevolence, however consentaneous in its object, or widely extended in action, would yet be inadequate to carry on a work of such magnitude as that which I propose. Viewing it in the light of a national undertaking, it should have the countenance and support of the State; legislation may be usefully brought to bear upon some of the points which I have indicated.

I can only suggest in a general way; the plan which I have barely sketched is obviously capable of being extended most beneficially in various directions. It has been suggested, for instance, by those who are favourable to the idea of such institutions, that "*their action upon society would be quickened by giving them the right of the Reformatory to repayment for expenses, and the power of detention during the period which may be found necessary to carry on the work of reformation.*"

But these remarks have already extended considerably beyond the original design of this paper, and I must now leave the details for discussion in the hands of those who are competent to deal with this important subject.

REVIEWS.

THE MUNICIPAL CORPORATIONS OF ENGLAND AND WALES.*

THIS work is intended to supply a want which has long been felt in this country, namely, an account of the various Municipalities in England and Wales. The plan of the work is to take the various counties of England and Wales alphabetically, and then, under each county, to introduce a description of the various boroughs, with details of their offices, privileges, and modes of local government. At the present day, there is no more interesting study, to those who are anxious to improve the municipal institutions of the country, than the actual details of the various powers possessed by our local authorities, and the way in which they are carried into effect. Not only are the offices and special privileges of each borough in England described, but there is attached to each article a local history, with an account of its trade, manufactures, charters, and local government, a description of its principal buildings, and an account of all that has been done for its sanitary welfare. This vast mass of information has been put into the smallest space, and the work is really a complete guide to all that is known about each municipality in the country. Of course, the notice of London is by far the most extensive in the work, and we know of no other volume in which so large an amount of information with regard to London can be obtained. As an example of the way in which generally the subject of the history of the corporations of England are treated, we give the following:

"The name of 'Guild' was changed by Edward III. for that of 'Livery Company' (in consequence of the distinctive dress worn by the different merchants), and the charters were granted to the master, wardens, and assistants of the court of the company. This monarch enrolled himself among the linen armourers (merchant taylors), and his example was afterwards followed by Richard II. Edward III. conferred on them the power formerly vested in the city wards of nominating all the city dignitaries, and even members of Parliament, but at the same time a heavy blow was aimed at the grocers by an act restricting each individual to one branch only of the trade he followed. At this time each of the companies returned an average of three common councilmen for the city. It was soon found, however, that the larger companies obtained undue weight in the city elections, and when Sir Nicholas Brember was returned lord mayor, 1383-85, the aldermen were ordered to cause four men to be elected for common councilmen out of the several wards, and no company was allowed to have more than six aldermen in its ranks, thus reducing the power of the companies in a political sense. From this time they gave their attention to the interests of their several trades and the markets: thus the grocers overlooked all the drugs;

* The Municipal Corporations Directory, 1866. London: Longmans, Green, and Co.

the goldsmiths the metals; the vintners the wines; the merchant tailors the cloths, &c.; and when any attempt at defrauding the public was detected, the offender was severely mulcted. The office of clerk was first instituted in the fifteenth century. . . . . These guilds were of the greatest service to trade in ancient times. They settled disputes between master and workman; they upheld the apprenticeship system, as being the best for producing skilled labour; and meeting at their respective halls, while they enjoyed the festive board, they discussed business matters; thus fostering the social virtues and increasing the mutual interest of master and workman. Many of the companies took cognisance of the changes in the various trades, so as to poise the rights and interests of capital and labour, thus awarding to the master his profit, and to the workman a fair rate of wages. But the usefulness of these bodies for trading purposes has rapidly declined. Several of the companies have become extinct, and many others appear to be on the verge of dissolution, while those which still exist (with very few exceptions) are only the dispensers of the bounty provided by their charitable predecessors. In 1837 there were eighty-nine companies existing; since that time they have been reduced to seventy-five, fourteen having ceased to return the number of their livery, some having as few as two members, and others scarcely enough to form a court. In this number we have the hatband makers, pinmakers, gardeners, soapmakers, woodmongers, starchmakers, longbow-string makers, combmakers, silkmen, tobacco-pipe makers, paviours, parish clerks, fishermen, and silk-throwsters."

As examples of the interesting matter given in the notices of county corporations, the following may be taken as examples. In the article on Winchester is the following notice:

"Ethelred, in 1002, formed the horrible plot of murdering all the Danes in the kingdom, and in this city the massacre commenced, such as were not actually put to death being mutilated and rendered incapable of any military service. In commemoration of this barbarous stratagem, the 'Hocktide Sports,' so called from cutting the hamstrings of the victims, were instituted by that king, and were continued, with a short interruption, until of late years. St. Giles's fair was at one period the largest in England, and extended to sixteen days, during which time no business was allowed to be transacted elsewhere within seven leagues of the hill. It was held on St. Giles's-hill, and formed a kind of temporary city, entirely mercantile, whole streets being appropriated to particular commodities."

In the account of Tewkesbury, we find the following:

"Tewkesbury was celebrated for the manufacture of mustard of so pungent a nature as to give rise to a proverb, describing a person whose countenance was morose as having surely lived on Tewkesbury mustard."

But the work is not merely a directory to the principal corporations of England; it contains besides a series of original articles, each of which has sufficient merit to demand a separate notice. Of these articles the first is "On Municipal Laws, with Analysis of Acts and Digest of Cases," by Mr. W. A. Holdsworth; the second is, "On Public Health," by Mr. Rendle; and the third is, "On Chambers of Commerce," by Dr. Pankhurst.

Mr. Holdsworth's essay forms a very appropriate introduction to the whole work, and consists of an introductory chapter, "On the Nature and History of Municipal Corporations, with an Analysis of the Municipal Corporations Act, passed in 1835." In a subsequent chapter, the miscellaneous Acts affecting the local government of boroughs are described, and the local proceedings to be taken under such Acts are pointed out. The Clauses Acts most important to the welfare of towns are afterwards described in detail. All persons living in towns, and

anxious to improve them by law, will do well to consult this admirable summary of the laws relating to the towns of England.

Mr. Rendle's article on "Public Health" is an energetic—in some parts almost passionate—appeal for further sanitary improvements in all our great towns. Mr. Rendle speaks more as the practical sanitarian than as the scholar or the man of science. Speaking of his experience in Southwark, he says:

"I could scarcely go to and fro for seventeen years in the region of the Mint, in Southwark, to which I was then surgeon, without reflecting somewhat upon the causes of the sin and disease I beheld. I came to the conclusion that, bad as my patients were, they were as much sinned against as sinning, and that young children who had the ill-luck to be born or brought up there had a very up-hill work—an almost impossible work, to find their way up to honesty, respectability, and good bodily and mental health. I was of course more concerned with their bodily condition. Nevertheless, I observed that much of the ill-health of the mind, which wandered into passion, and violence, and sin generally, had in this sad region but little effectual medical or other treatment, no prevention, and but little cure; and that the ill-health of the body, in the shape of child decay, consumption, fever, and the like, had as little chance of an effectual amendment. Naturally I reflected upon these things, and I thought that did we but know, and had we but the necessary courage, unselfishness, and perseverance, we might amend much of all this: not suddenly, we cannot so change the habits of a life, or alter a locality, but slowly and with patience we might imitate the great Master who especially visited and cared for such outcasts; and, if we could not better the state of the old offenders, we might at least interrupt the supply of young recruits for this evil service."

Speaking of the residences of the poor, Mr. Rendle says:

"As the present miserable homes supplied to the lowest workers in large towns are usually extensively underlet, the profits are, in the aggregate, considerable; but they have of course to be divided. Here is the opposite condition, the minimum of health and convenience at the maximum of rent. These habitations are usually so kept as to be a cost and a scandal to the community. No man has, I think, a right so to burden society for his own illicit profit; and accordingly he will not be wronged, by being compelled to sell at a fair valuation to others who can and will give a fair home for a fair rent. I believe that there is no remedy in large towns, in the case of these squalid dwellings, other than to compel the owners to rebuild healthy homes upon authorised plans; or to submit to this compulsory sale. Railways invading London and large towns, should be compelled to furnish cheap and convenient transit for work-people, who, not being compelled to live near their work, might indulge in the healthy luxury of a suburban dwelling and garden. That this scheme may not fail, the present not very creditable building Acts will have to be amended, the class of small buildings erected on the outer bounds of the metropolis for the working classes being for the most part built in ignorance or in defiance of the plainest rules for health. As to the healthiness of the model dwellings, there can be no doubt; every one appears to be agreed upon this point. The last evidence I have, and which may serve as a fair specimen, is from Dr. Hillier, as to the model lodging-houses in Pancras-square; here the annual mortality per 1000 is 18, including deaths from a scarlatina epidemic. This calculation is on an average of nine years, and may therefore be relied on. It may be that the great improvements which are beginning to be thought necessary in London and other large towns are not likely to return an immediate money profit. Even if so, money is not the only, not always the most profitable result of our work on earth. We cannot dare always to measure our benefits by the money test only. The great and magnificent alterations in Paris have not paid in this sense. Not the less, says a competent observer, 'Paris is an enormous gainer by all that has been done, and the improvement that has already taken place in the death-rate of the city must be mainly ascribed to the well-directed efforts of the Emperor and the Prefect.' We in England require everywhere a competent sanitary

authority, and interwoven into our free institutions a little of that power and will for carrying out any great good, which at present appears to be obtainable only under a wise despotism."

Mr. Rendle's article should be printed separately and sold at a low price as a sanitary tract. It could not fail to awaken in the minds of all who read it, a sense of the sanitary evils under which the great mass of our population labours, and the importance of more active sanitary measures than have ever yet been contemplated in this country.

Dr. Pankhurst's article on Chambers of Commerce embraces, not only an interesting history of these institutions, but of the various topics of public interest which they have taken up, such as Bankrupt Law, Patent Law, Partnership, International Maritime Law, and the Law of Partnership. Speaking of the Social Science Association, he says:

"The National Association for the Promotion of Social Science has greatly assisted the deliberations and proceedings of Chambers of Commerce. By its action it has introduced into the discussion of commercial and industrial questions a rich variety of experience and interests, than which nothing can be more necessary or valuable in view of soundness and result. On the several occasions of the meetings of the Social Science Association, which are held annually in one or other of the great towns of the empire, there have been called together, besides the members of the Association, including a large number connected with the conduct of public affairs, and with the administration of the law, not only delegates from the Chambers of Commerce, and other similar bodies of the kingdom, constituting a really national representation of commercial interests, but also representatives from important commercial associations of Europe and America.

"The co-operation of these varied elements in a common work is attended with the best effect. In particular, it establishes an intimate and cordial relation between the action of commerce and the agencies of the law. Now this relation is a real necessity, for side by side with the development of industry and trading enterprise, jurisprudence must operate to secure to commerce its legitimate fruits by guarding against, by repressing, and by punishing the devices and contrivances of bad faith and fraudulent artifice.

"By such machinery the best care is taken that the theories propounded may be tested and corrected by wide and varied experience, and the highest assurance is furnished that the theories themselves will be reduced to practice in association with the greatest number of interests."

We have endeavoured to give an outline of the contents of this valuable work, and we feel assured that its objects and execution need but to be known to give for it a place in the library of every merchant and statesman, and collection of works of reference.

MONTHLY CHRONICLE.

Zymotic Diseases in London, in June.—The following zymotic diseases were registered in London during the month of June:—

	June.	May.
Small-pox	183	101
Measles	348	239
Scarlet-fever	195	80
Diphtheria	31	14
Whooping-cough	362	438
Typhus	232	206
Diarrhœa	171	61
	1522	1139

This is an alarming bill of mortality. Every form of disease has increased, with the exception of whooping-cough. The whole mortality is nearly 500 above that of the previous month. The greatest increase is under the head of diarrhœa. The diarrhœa of June has become cholera in July, and there can be no doubt that a great outbreakof cholera has occurred in London. Its extent and fatality will depend much upon the exertions that are immediately taken. No time should be lost and no means of precaution left unadopted that can be likely to prevent the extension of the disease.

Mortality of Towns in Great Britain in June.—The following returns are made up from the weekly returns of births and deaths in London and twelve other large towns in England, published by the Registrar-General. For the sake of comparing the improvement or otherwise of the health of the various towns, the returns of April and May are placed by the side of those for June:—

	June.	May.	April.
1. Liverpool	37	38	39
2. Glasgow	30	32	36
3. Leeds	30	39	33
4. Manchester	28	27	36
5. Sheffield	27	35	30
6. Newcastle	26	28	29
7. Edinburgh	25	28	27
8. London	24	26	26
9. Dublin	24	26	28
10. Salford	24	31	37
11. Bristol	22	25	29
12. Hull	20	27	26
13. Birmingham	20	26	28

The returns for the first and second quarters of the year are given below:—

	1st Quarter.	2nd Quarter.
1. Liverpool	45	38
2. Manchester	39	30
3. Leeds	36	34
4. Salford	34	30
5. Sheffield	34	30
6. Bristol	32	25
7. Newcastle	32	27
8. Glasgow	31	33
9. Edinburgh	30	26
10. Dublin	30	25
11. Birmingham	30	24
12. Hull	28	24
13. London	25	25

The towns are placed according to the rate of mortality in the first quarter, and from this it will be seen that Liverpool still retains the highest rate of mortality, although much improved in the second quarter. London, which in the first quarter was lowest, gives place to Birmingham and Hull in the second quarter. A curious fact here comes out, and that is, that whilst every town improved in its health in the second quarter, London remained stationary. In his return for June 23, the Registrar-General states that he has received from the Bureau of Records for New York the return of deaths in that city for the week ending June 2, which was 26 in the 1000. The average temperature was 62°. During the same week in London the rate of mortality was 26 in 1000, and the mean temperature 56°. We should be glad to see a weekly return of deaths from New York regularly in the "Weekly Return" of the Registrar-General.

Medical Certificate of Death.—It will be news to many Englishmen to know that there is no law in this country requiring a medical certificate of death before burial. All that is required by the law is that some person should answer for the individual being dead, in order that he or she may obtain the necessary warrant for interment. Now, this defect of the law leads to so much irregularity, and opens the door so widely for the commission of crime, that in 1862 Dr. Lankester brought the subject before the Metropolitan Association of Medical Officers of Health. This association appointed two of their body a deputation to wait on the Registrar-General. The following letter was on that occasion received from Major-General Graham:

"General Register Office, Somerset House, December 16, 1863.

"Sir,—I will thank you to inform the Association of Medical Officers of Health that I will not fail to give my best consideration to the alterations in the medical certificate of cause of death, which were suggested by you and Dr. Buchanan when I lately had the pleasure of seeing you here.

"At that time you stated that there were four other points connected with this department, in the opinion of the Metropolitan Association of Medical Officers of Health, susceptible of improvement:

"1st.—That the registration of births should, by statute, be made imperative and compulsory in England and Wales, as it now is in Scotland and Ireland.

"2nd.—That the births of children stillborn should be registered.

"3rd.—That no death should be registered except a written medical certificate of cause of death, from a legally qualified practitioner, be produced, or the record of the verdict of a jury signed by the coroner.

"4th.—That no *sudden* death should be registered until the decision of the coroner be made known to the registrar, whether he will hold an inquest or not.

"I cannot say that I entirely concur in the opinion that you expressed, that all these changes in the law should be made; but I will not fail to bring them under the consideration of her Majesty's Government, in order that a decision may be arrived at, whether it is desirable, for the sake of these proposed changes, that in the next session of Parliament another bill should be introduced amending the present law of civil registration of births and deaths in England and Wales.

"I have the honour to be, Sir, your faithful Servant,

"George Graham, Registrar-General.

"Dr. Lankester, M.D., 8, Saville-row."

Since that time the subject has been allowed to drop, and no alteration has been made in the law. We are glad, however, to find that this subject has been taken up by Dr. Farr, who, in an Appendix to the "Registrar-General's Annual Report for 1864," refers to the defects of the present system of registration. In order to remedy these defects, Dr. Farr proposes to amend the medical certificate so that the medical attendant would certify that he had either seen the deceased on the day of death, or had seen the body subsequently for identification. In cases of death without medical attendance, or where the medical attendant refuses to certify, Dr. Farr proposes to appoint an officer in every district, whose duty it should be to visit the body and ascertain if the death were free from suspicion, and, if so, give the necessary order for burial; but, if there was suspicion, that this officer should withhold his certificate until an inquest had been held. But surely this officer is a perfectly unnecessary addition to our present staff of public medical officers. If the law requires that no body should be buried without a *regular* medical certificate, and that all irregular certificates be referred to the coroner of the district, there would be no necessity for a registration medical officer. In his letter Dr. Farr recommends the construction of decent dead houses in every town throughout the kingdom. These structures are very much wanted in the neighbourhood of London, where scenes of the most disgusting

kind are constantly enacted on account of the refusal of any one to take in bodies found dead. Dr. Farr also recommends that the registration medical officer should give certificates in the case of stillborn children. Dr. Farr enumerates the following advantages of his plan:

"1. The *cause of death* would in all cases be certified by one professional witness, and would be recorded as correctly as is practicable in the present state of science.

"2. The fact that a given person died at a given place would be attested by the informant as at present, and the evidence would be enormously strengthened by an educated witness. While so large a portion of our informants cannot even write their names, this is of great importance.

"3. Secret murders and attempts on life, and deaths of children and old people from neglect, could rarely escape detection; they would, other things being equal, be less frequent than they have been in past times. Life would become more secure. The public solicitude, like a Providence watching over all, would cherish the reverence of all classes for human life.

"4. The frauds of informants would be less common, and no registrar would again manufacture fictitious entries, thereby throwing discredit on the whole of the national registers.

"5. Much trouble would be saved to the public, who are now put to expense in getting corroborative certificates, as it is felt that the present certified copy of an entry is most imperfect evidence of the death and identity of deceased persons.

"6. The registration medical officer visiting the dwellings of people in unfavourable sanitary conditions would discover and point out the consequences of those conditions to the families themselves, and to the authorities, in seasons of cholera, of fever, or other epidemics. The authorities would find it convenient to make him the health officer of the district; and often where such an officer already exists, he might discharge the medical registration duties. The Postmaster-General would employ the registration medical officer in insurance business, and so would insurance offices, to whom he could render essential service in putting a stop to the numerous frauds which are every day committed at their expense."

Cholera.—There can be little doubt now that epidemic cholera has at last appeared in England. In Liverpool, Southampton, Llanelly, Bromley, and the east of London, we have undoubted evidence of the appearance of cholera in its malignant form. No less than 346 cases occurred in London during the week ending on the 21st of July. That it has been imported into these districts there can be little doubt. There were cases of cholera in Southampton last year, and it was imported into Liverpool in the beginning of the year. The places where it has broken out are precisely the places where we should expect it, from their intercourse as seaports with the towns of the Continent where the disease is now prevailing. From the Continent we have lamentable accounts of the prevalence of the disease. It has been especially severe at Amiens, in France, where upwards of sixty persons have died in the

week during the month of July. At Rotterdam it has been reported that there has been, during the present year, 9000 cases, of whom 6000 have died. The great question for the people of England to consider now is, What is best to be done? All are agreed that cholera is most severe amongst persons who live in dirty, ill-ventilated rooms, and who are regardless of personal cleanliness. It is plain, therefore, that one thing should be done, and that is to cleanse houses, premises, and places, and to introduce, as far as possible, cleanly habits, fresh air, and pure water. It is still a question amongst medical men as to whether cholera depends upon a special poison, which can be conveyed from one person to another, or upon general conditions produced by vicious habits, foul air, and dirt. Whether one theory or the other be true, there can be no doubt of the wisdom of making all practical measures for the prevention of the spread of cholera include both issues. Let all endeavours to arrest the disease include all possible sources of it from dirt, and prevent the possibility of contagious matter being carried from one individual to another. In every parish in the kingdom sanitary committees should be at once formed, with whom one, two, or more medical men should be associated. To this committee every case of diarrhœa or cholera should be reported, and in every suspicious instance an investigation of the locality should take place. Drains and cesspools should be cleansed, or, at any rate, deodorised; all dirty rooms, areas, outhouses, water-closets, privies, &c., should be whitewashed and otherwise cleansed. The supply of water to the house should be examined. Cisterns and water-butts should be cleansed. Where water is supplied from pumps, the water should be tested and the wells examined, and if there be any doubt of the purity of the water, they should be closed. When organic matter exists in water, it should be filtered or boiled, or both, before drinking. People should be cautioned against eating tainted food of any kind. Where cholera has broken out, people should be warned against the danger of eating food from their hands after handling those who are affected with the disease. All the excretions of the patient should be deodorised by the use of the permanganates, or carbolic acid. Short directions in the form of handbills should be spread by the sanitary committee, taking for their basis the "Memorandum of a plan of united action in the case of an epidemic of cholera," drawn up by the metropolitan medical officers of health.* There should be no hesitation about this matter. No town in the kingdom is safe. Parish funds cannot be more wisely and economically spent than in preventing the introduction of this fatal and expensive disease. We do not venture to suggest any plan of treatment. What we most earnestly implore the public is, not to trust advertisers and illiterate quacks. Such men make their living by preying on the fears and terror of the public at such seasons as these. The whole history of this terrible disease shows that no one system of treatment can be trusted for cure. An examination of a

* This document will be found at page 278 of this journal, and may be had separately, at 6, North-street, Manchester-square, London.

hundred different methods of treatment shows that *opium* was the principal remedy in eighty out of the hundred, and we suggest to the medical profession that this fact ought alone to lead a scientific practitioner to hesitate before treating a case of cholera—at any rate, in its diarrhœal or early stage—without this remedy.

Infanticide.—The *Medical Times and Gazette*, while fully recognising the value of Dr. Lankester's efforts to put down infanticide, protests against the matter being made (as it has too much been made) the subject of sensational leaders in the penny papers. Lord Stanley, at Birmingham last autumn, gave a true estimate of the case when he spoke of it as "one of those periodical panics to which all who have watched the course of public opinion in this country know that we are liable." But a panic of this kind is decidedly an unpleasant one. It is (as the *Medical Times* remarks) exceedingly unpleasant to find ourselves stigmatized in foreign newspapers, on Dr. Lankester's authority, as "a nation of infanticides;" and this at a time when infant mortality is actually decreasing. Foreigners are ready enough to avail themselves of our insular habit of washing our dirty linen out of doors. The Papal Government even went so far as to send over an emissary, the Abbé Césare Contini, to collect statistics; and his report, "based on Dr. Lankester's statements," gives the astounding (and, to the Ultramontane mind, no doubt highly gratifying) intelligence, that 13,000 children are yearly murdered by their mothers in heretical England! The way in which M. Contini arrives at his monstrous total is a curious instance of how (as the late Sir R. Peel used to say) "anything may be proved by figures." Dr. Lankester holds from seventy to eighty inquests annually on children found exposed in the streets or elsewhere, and "gives it as his opinion that, from the advanced state of decomposition in some of the bodies, at least an equal number escape detection." Now, the total number of inquests on children under seven, held by English coroners, M. Contini found to be 6506 in the year 1863; hence, on the Lankestrian hypothesis, as interpreted by the Italian abbé, there must be 6506 cases which escape observation. Hence the 13,000 cases of infanticide. We have the Middlesex coroner to thank for this conclusion. He once rated the yearly victims of infanticide at 4000, because in his district of a million people eighty inquests are held and eighty cases undiscovered. And so he accepted this as a fair average, not only for the rest of London, but also for country parts, putting forward, moreover, the horrible hypothesis, that one out of every thirty women whom you meet in the London streets has some time in her life "put away" her child. No doubt the bastardy laws are as bad as they can be, and the law which makes no distinction between murder and infanticide defeats itself. But still it is absurd to play the alarmist in this manner. Dr. Farr, the great authority in statistics of this kind, says that infanticide is the cause of a very small fraction of children's deaths. He tells us, too, that the mortality of young children is less in England than anywhere in Europe, except in Norway and Sweden. The

undeniably excessive rate of infant mortality in our great and little towns is due mainly to defective sanitary conditions. The landlords are the real murderers, slaying their tens of thousands, while unhappy mothers slay their tens. The *Medical Gazette* appeals strongly to the press to avoid sensational paragraphs on this subject: "Such crimes are undoubtedly repeated from imitation. Some phrase seizes the imagination, and the morbid disposition to repeat the act becomes sometimes irresistible."—*Pall Mall Gazette.*

Sisterhoods in Asylums.—Mr. A. F. Browne, Commissioner of Lunacy in Scotland, in a paper in the *Journal of Mental Science*, says:—"There is a demand for work for women. Here is a labour, a mission open to, and worthy of the humblest capacity and loftiest aspiration; duties so sad and servile as to deserve the name of penance, if it please the labourer so to regard them; and others so refined and elevated, in nature and range, as to exercise the wisdom of the serpent as well as the gentleness of the dove. For such as have no home, or no suitable home, here is a retreat; for such as crave a wider field for exercising sympathy than what their natural vocation affords, are offered a life of cares and anxieties, duties and rewards; for such as desire to emancipate themselves from the conventionalities of society, from the luxurious or frivolous or do-nothing habits of their class or training, or who court work for its own sake, for the mental health and complacency which it brings, or even for the retirement, the protection from the world, the pride of life, &c., and for the independence which is its price, an asylum provides real, substantial, Christian exertion, so varied and yet so constantly appealing to the better part of human nature, and exacting so much of thoughtfulness, reticence, and self-possession, as to realise, in great measure, what religious associations profess to have as special objects, and to desire to undertake."

Cow-Cottagers' Widows.—In many parts of England there are a large number of cow-cottagers, and almost everywhere a sprinkling of them is to be found. They are a highly respectable and industrious class, but are not wealthy; and though they live in comfort, and save a little, they are not able to lay by large sums of money. Thus their widows would be left in poverty, did not the custom prevail of allowing them to keep the cottages after their husbands' death. The son generally lives with his mother and works as a labourer, giving her in after-hours any assistance she may require with her land and cows. Sometimes he marries and lives in a cottage near at hand; sometimes, if the mother is infirm, they all live together, and the daughter-in-law does the work, *i.e.*, makes the butter; but, under any circumstances, the widow is sure of a provision and of kind treatment from her son, as the cottage and land are in her holding; but now circumstances are not unlikely to occur which will put an end to this happy arrangement, and leave the widows dependent on the kindness of their son, and if they have no son, deprive them altogether of the advantage of the cottage, and leave them most likely to the parish. It is proposed to give the franchise to occupiers of land at 14*l.* rental. This

will include many cow-cottagers; but as the widows will have no votes, landowners will be less willing than they now are to let them keep the cottages. This will be a great hardship to a numerous respectable and deserving class of women, who will be deprived of material advantages, and condemned to poverty through no fault of their own. This will not be the case under all landlords; some will give up their political influence, rather than act unkindly to the widow of an old tenant, but others will not be so considerate. Now, to obviate this hardship, it is suggested that the same plan might be pursued in England which is followed in Austria, and from which no bad consequences appear to have arisen. The plan is simply this,—that persons who hold land should have votes, whether men or women. In Austria, however, female voters do not go in person to the polling-booth; they send their vote by proxy. Nothing could be more easily done. The female land-occupier might write down the name of the candidate she favoured, followed by her own signature, in the presence of a magistrate, churchwarden, or other accredited person, who would also sign his name as witness, and then this paper might be conveyed to the polling-booth by any neighbour, who was going to vote for the same candidate. By this simple contrivance, a great practical hardship and cause of suffering would be avoided.—*Agricultural Gazette.*

Recruits for the Navy.—If we lived abroad, and had the happiness of being Frenchmen, or Dutchmen, or Austrians, or Prussians, or Portuguese, should we be incessantly stirred up to the astonished irritation with which we read of the unaccountably suicidal folly of English officials and men of power and influence? Or is it the fact that our personal liberty necessarily places our affairs in the hands of administrators inferior to those who do the national work under a more despotic class of rulers? For instance, is there any decently governed continental country where the mere announcement of such a state of affairs as that put forth by Sir J. Hay in his recent speech at Stamford would not lead to the immediate adoption of the obvious remedy? The new Junior Lord of the Admiralty informs us of the pleasant fact that the men who enlist in our navy are diminishing at the rate of 2000 a year, and that this diminution has been going on for the last four or five years, notwithstanding the increase that has been made in seamen's pay. At the same time, he reminds his audience that there exists a source from which the navy might be amply recruited by the easiest of processes. Our cities swarm with a multitude of wretched boys, the offspring of criminal or pauper parents, who are practically forced by a terrible destiny to swell the ranks of the huge criminal adult population. Yet these boys have only to be taken possession of by the State, and placed under proper training, to furnish an almost endless supply of sailors, both for the navy and the merchant service. A mere clearance of the boys now fed, clothed, and taught at the public expense in union workhouses, would at once go far to supply our most pressing wants. The future of these poor children, as it is, is doubtful enough. To turn them into embryo sailor lads would be the greatest of blessings

to them. The additional cost would be a trifle, for we already feed, clothe, house, and teach them. Here, then, is a case in which there are practically no difficulties at all, which cannot be easily surmounted by an administration of average capacities and energy. Will Sir J. Hay prove to be the man? In his speech he speaks only in a vague way of those who "from want of education will swell the criminal classes." We take the liberty of suggesting to him something definite, to make a beginning. Let him and Mr. Gathorne Hardy put their heads together and make arrangements for transferring a few thousands of the boys now thronging our workhouses to properly planned training-schools, and thence to training-ships. What is being done with Greenwich Hospital, now that it has lost nearly all its indoor pensioners, that it should not at once be made use of for such a purpose?—*Pall Mall Gazette.*

The London Workhouses. — When the *Lancet* determined on appointing a commission to inquire into the state of the London workhouses, few persons were prepared for the revelations of neglect and suffering which were thus made known to the world. The Poor Law Board were compelled, by the reports published by the *Lancet* commissioners, to make inquiries on their own account, and accordingly appointed Mr. Farnall and Dr. Edward Smith to report especially on the subject. The reports of these gentlemen have now been published, and any one who will take the pains to go over their contents will see that the *Lancet* commissioners in no way overrated the deficiencies of the London workhouses. In looking over these reports, it seems almost incredible that intelligent men, with apparently respectable servants, and medical men of reputation and character as their officers, should have allowed institutions under their control to have been conducted generally in so careless, and, in some instances, so shocking a manner. Dr. Smith, it is true, apologises for the wretched way in which the paupers in our parish infirmaries are treated, on the ground that they are better off, after all, than they would have been at home; but it should be recollected that this has never been made an excuse for neglecting our prisoners and lunatics, and ought not to be received one moment as an apology for the dirt, neglect, and indecency which have been revealed in these reports. With regard to Mr. Farnall, it must be a matter of surprise to every one to find that he has so suddenly become the advocate for workhouse reform. For years he has been the inspector of the Poor Law Board, and, to a great extent, the apologist of the very evils he now condemns. He conducted the inquiries into the case of Gibson, at the St. Giles's Workhouse, with the greatest regard to the feelings of the guardians at that parish, and had not a word to say in condemnation of the proceedings which led to the "laying-out" case in St. Pancras. Dr. Edward Smith comes fresh to the work, and his report will probably be read by the general public with the greatest interest. Dr. Smith has, however, disfigured his report by an attempt to show that a less amount of cubic space for the sick is required than is usually thought to be necessary. He considers

that a room may be well ventilated with 500 cubic feet to each individual, whilst all our best sanitary authorities demand from 1200 to 1600 cubic feet. With this exception, we regard Dr. Smith's recommendations as commendable. Except in the point of ventilation, there is little difference between the reports of the commissioners, and we give the "conclusions" at which Dr. Smith has arrived *in extenso:*

"1. *As to the Buildings.*

"The sites of the workhouses are in all cases as healthful as the surrounding localities; and, with the exception of those lying upon the level of the river, they are all that could be desired.

"The drainage and water-supply are almost universally good.

"Of the older workhouses, those at Clerkenwell and St. George-the-Martyr, and the main buildings (not the infirmaries) at St. Giles and Rotherhithe, should be taken down.

"It has already been determined to remove the Islington, St. Martin's, and the Strand Workhouses. When material changes are to be made in the workhouses at Poplar, Lambeth, Bermondsey, Holborn, and St. Luke's, it may be advisable to reconstruct and perhaps to remove them.

"Of the newer workhouses, it is intended to build a new infirmary at Greenwich, and material changes in the construction of the Hackney and St. Margaret's Workhouses will be necessary.

"There are one or more wards in nineteen workhouses which are unfit for the use of the sick.

"The size and general arrangements of the wards are in general good, but the wards in the detached infirmaries are in general smaller and less suitable than those in the body of the workhouses.

"The water-closet, lavatory, and bathing accommodation is good in many, but deficient in other workhouses, and may be readily improved. The supply of hot water to the different parts of the workhouses is also very frequently deficient, as is also that of cold water on Mondays.

"From the construction of many workhouses too little light is admitted into the corridors, and through the corridor walls into the wards, as also through the outer walls, all of which may be remedied.

"The ventilation is all but universally defective, whether in the new or the old workhouses, and demands immediate attention. It may be made good in the course of a few months.

"The cubic and floor space required by the Poor Law Board is not allowed in some wards of all except four or five workhouses. This is more particularly found in the Strand, Clerkenwell, and Greenwich Workhouses, and is there almost universal.

"The Poor Law Board should by order fix the number of beds which should be placed in each ward.

"The minimum floor space to be required for each bed is 6 feet by 9 feet, or 6 feet by 10 feet, or from 54 to 60 superficial feet, and the

height of the room should be from 10 to 12 feet. The space between the beds should not be less than 3 feet. We have found, by experiment, that 500 cubic feet in a well-ventilated room is sufficient for health, and that no ward, having that capacity, need have more than 0.046 per cent. of carbonic acid in the air by day, and 0.050 to 0.075 per cent. by night. The essence of the question is the ventilation, which may and must be rendered good.

"Hence, in fixing the number of beds to be placed in each room, each and all of the following regulations should be observed:

"1st. That not less than 500 cubic feet be allowed.

"2nd. That not less than 3 feet between each bed be allowed.

"3rd. That not less than from 54 to 60 superficial feet be allowed.

"As the wards are usually from 10 to 12 feet in height, and some of them nearly 30 feet in width, the usual cubic space will exceed the minimum.

"More space is required in the large majority of workhouses. In about half of them there is plenty of land upon which to build. Some are about to be removed to larger sites, others must be pulled down, and a few remain, of which the guardians must determine whether they have sufficient land or not.

"Re-arrangement of the different parts of workhouses is necessary. As the number of able-bodied inmates is small, except in a few workhouses, and as the children, fever, and small-pox cases, venereal cases, and noisy and dangerous lunatics, are practically not retained, the workhouse is required almost exclusively for the aged and infirm (particularly for women), with the sick arising from them and from other sources. Hence, the whole of the main building should be given up to those two classes, whilst the able-bodied, lunatics, and the few cases of disease requiring separation, should be placed in other buildings.

"The body of the workhouse, rather than the infirmary building, should be enlarged, and as these institutions are really asylums, and are neither workhouses nor hospitals, it would be more correct to designate them 'parochial asylums.'

"Cleanliness is almost universal, and is usually very remarkable. The beds and bedding are generally good.

"A large proportion of the workhouses are deficient in articles of furniture, which may be readily supplied.

"It may be needful for the Legislature to confer larger borrowing powers upon the guardians.

"2. *As to the Medical Care of the Aged and Infirm, and Sick.*

"Paupers should be employed only as servants and in subordinate capacities. There are now paid non-pauper nurses in all the workhouses, except three or four. Their number is upwards of 130, and it should be immediately doubled. This the guardians may readily effect.

"The medical attendance upon the sick is generally good, but a re-arrangement of the mode in which the medical officer performs his duties is necessary, with a view to the devotion of more time to them.

The medical officers should act more generally as sanitary officers, and their recommendations of every kind should be in writing. The time required to keep the books of the medical officer should be lessened by placing on a separate list all those aged and infirm, and imbeciles, who may be permanently placed upon a special dietary, and the list of the medical officer should in future contain only those who are really sick.

"The guardians should provide all drugs and dispensers.

"The salaries of the medical officers should be almost universally increased, and, if possible, an approach to an uniform system of payment should be devised.

"Their orders for medical extras and appliances are universally allowed by the guardians, and they alone should be held responsible for their sufficiency.

"3. *The Government and Supervision of the Workhouse.*

"Some change is desirable in the constitution of the board of guardians, as by extending the period of service of the elected guardians.

"The master, matron, and medical officer should have a deeper sense of their responsibility to the Poor Law Board, and of the two former, some have well earned, and should now receive a superannuation allowance.

"All parishes and unions, whether with or without local Acts, should be brought equally under the direction of the Poor Law Board.

"The present amount of inspection, whether by the visiting committee of guardians, or by the Poor Law Board, is not sufficient, and the system is imperfect. More than one inspector of the Poor Law Board should be appointed for the district, and, after the example of the Lunacy Commissioners, they should have special and different professional qualifications. The chairman of the board of guardians should be a chief member of the visiting committee, and bear a large share of the responsibility of the office. Under efficient visitation and inspection, I do not doubt that many of the present evils would be removed.

"General instructions in reference to the plan of construction, ventilation, size of rooms, &c., of workhouses, should be prepared and issued by the Poor Law Board.

"An uniform dietary should be prepared by the Poor Law Board, and a special dietary be provided for the aged and infirm."

Suppression of the Dog Nuisance.—The *New York Times* publishes the following account of the manner in which vagrant dogs are dealt with in that city during the ninety days which follow the 18th of June in every year. Half-a-dollar is paid for the apprehension of each dog, on delivery at the dog-pound, which, for obvious reasons, is near the water side. The dogs are kept in the pound until four P.M. of the day following that on which they were captured, when—unless they have been in the meantime reclaimed and their expenses paid, or unless they are dogs of obvious value, likely to find purchasers—they are in-

troduced into the dog cistern, which will hold from sixty to eighty dogs without uncomfortable crowding, the lid is fastened down, the water is turned on, and there is an end of them. Their corpses are buried by contract, or sold for manure—"the new machine for grinding them up and extracting their bark for medical purposes having," says the *New York Times*, "hitherto proved a failure." The payment of half a dollar for the apprehension of each dog converts every horrid little street boy into a vigilant dog policeman.

Miss Garrett, L.S.A.—At the late inauguration of a dispensary for women and children, in Seymour-place, Bryanston-square, under the management of Miss Garrett, Dr. Billing said—"Not only is the management mainly in the hands of ladies, but in Miss Garrett we have the first legally qualified female practitioner which England can boast. In America, where they move faster than we do, I am assured that women doctors are establishing themselves fairly in the good opinion of the public; that during the late war there were even women who acted with skill and efficiency as army surgeons. In France and many parts of the Continent the practice of midwifery is as a rule in the hands of women. I consider it very important that women who enter the profession should not profess to take medical supervision unless they have had a complete medical examination and training. And this is what Miss Garrett has had. She is not only a licentiate of the Apothecaries' Society, but would undoubtedly have obtained the degree of M.D., had she been allowed to present herself for examination at the London University. We cannot call Miss Garrett a physician-accoucheur, because the College of Physicians also refuses to admit her, but she has the diploma which nine-tenths of the general practitioners hold—the license of the Society of Apothecaries, and, what is of more consequence, she has the knowledge which will qualify her to practise with skill and success." The *Lancet*, referring to the opening of the new dispensary, says—"Miss Garrett has surmounted the great difficulties which surround the attainment of a complete medical education for women with singular energy and perseverance, at great cost, and after long years of arduous labour. She passed an excellent examination at the only board which could or would examine her, and she is as well entitled to practise as anyone in the kingdom. The position which she has taken up is entirely exceptional, and corresponds with that which we assigned to her as of necessity. She has settled in a great centre of population, and aspires to a special practice amongst women and children. This we believe to be the only condition under which females can successfully practise medicine. It is one which will always limit their number, for only a few people are fitted for such a position; and the competition which they must undergo in practising a speciality amongst large populations is of a severe kind. There is only room for a few practitioners, and those of the highest qualifications. In this exceptional career Miss Garrett is a pioneer, and is entitled to great credit for her earnestness and energy. How many will or can successfully follow her example, or what would be the likely result of their endeavour to do so, we refrain from prophesying."

PROCEEDINGS OF SOCIETIES.

Royal Dublin Society.

A scientific meeting of the members of this body was held in the Board-room of the Society's House, Kildare-street, on the 28th of May last; Dr. Evory Kennedy in the chair.

Dr. E. D. Mapother, Professor of Hygiene, R.C.S.I., read a paper on "Labourers' Dwellings — Successes and Failures of Efforts to improve them by means of Inspection, Loans, and Public Companies; and the Expediency of extending to Ireland the compulsory Principle in their Erection and Maintenance." The following is a short abstract:

"The dwellings of the poor in cities, towns, and rural districts in Ireland are ill-constructed, dilapidated, overcrowded, and unwholesome. Let me attempt the description of one or two in each of these situations—Gill-square is a blind court opening by a narrow archway, under one of the houses in Cole-alley, Meath-street, in this city. In it there are nine three-storey houses, built on three of the sides of a square of about fifty feet; the roofs are broken, the walls present a most unsafe and tumbledown aspect, the windows are boarded up for more than half their space. Every room is to the utmost overcrowded with beings whose dirty, ill-clad, and spiritless aspects it is saddening to behold. There is but one yard for all, and in this, till last year, there was a hovel about ten feet high and eight square, in which three adults were huddled. Here, however, time has wrought improvement, for there now remains but a heap of rubbish. In a neighbouring house in Cole-alley, some years ago, twenty people were found lying in one room, of whom five were ill of fever; and Mr. N. Robinson has ascertained that in the 171 rooms of this alley there exists an average of over five persons. No. 56, Bow-lane, West, I have described in a recent report to the Corporation as follows: Hall and stairs covered with three inches of crusted filth; first flight so ricketty as to be unsafe; second without a bannister; floor of second landing broken into two holes about a square foot each; dangerous to life and limb; ceilings of both top floors broken and let in rain; no lower sash in window of back room, so that it had to be covered with a petticoat nailed over it; such state would produce colds and rheumatism; and back yard without a sewer—prolific causes of diarrhœa. Poverty of the owners is not the cause of the dilapidation of these abodes, for the persons who set them, like many of their class, have raised themselves to comparative affluence by profits thus gained from the poor. In Cork, things are no better, as we learn from recent reports of the Sanitary

Committee. The overcrowding of the wretched tenements in which they live, each house containing several families, ranging in the aggregate, in some instances, from thirty to sixty human beings, male and female, in each house, for which large rents are exacted by the landlords, who will not spend one penny in the cleansing or improvement of their houses, unless coerced by force of the law to do so. Your committee have learned that a practice prevails amongst poor families occupying rooms in these houses to underlet a portion of their rooms to nightly lodgers—an evil which it appears to your committee might be met by the enforcement of the Lodging House Act. The labourers' cottages in such small towns as Chapelizod, Navan, Carrick-on-Suir, or Ennis, are usually built in lanes, and are often placed back to back, excluding all chance of thorough airing, or the provision of sanitary accommodation; they consist of a single room, or a lower room and a sleeping place, of about twelve feet square and eight feet high, which offers for the breathing of the five inmates (the average) and the vagrant, who is almost invariably accommodated with a night's lodging, about 192 feet of space, 1000 being the average in public institutions. This would not be so hurtful if there were any means of renewing the air within it; but from the absence of a chimney in the sleeping-room, which is usual, the small size and immovable state of the windows, no ventilation occurs. In such an overcrowded state there can be no decent separation of the sexes. When a death from contagious disease occurs in such an abode, the retention of the body within it is fraught with fearful evils; and since the abolition of the Vestry Act there were no funds for interment, and if the relatives were unable to provide them, they had to beg the amount from the neighbours. Sir Hervey Bruce has, however, obtained an Act this session which empowers poor-law guardians to bear the expenses of interment. Neither in such a room can ablution of the whole body be accomplished, and I have frequently found persons (especially females) suffering from skin diseases and other maladies, who for many years had never washed any part of their bodies but the face, neck, and hands! Evictions and the demolition of cabins in the rural districts have driven agricultural labourers into the small towns, and as new abodes in the place of those removed would be subject to taxation, they have not been erected. Besides the fearful overcrowding thus induced, the labourers have to expend their strength in walking long distances to their work. The remedy is that which followed in England last session, upon a masterly demonstration of its necessity by Dr. Hunter, of the Medical Department of the Privy Council—namely, union rating, for which a bill has been introduced by the members for Dungarvan and Limerick. The mud hovel of the southern and western peasants is too well known by the sketches of English tourists to need any description here. Planted anywhere, regardless of situation, the low walls, the black, half-rotten thatch, the want of any proper flue or of windows (for the hole filled with an immovable and partly glazed sash cannot be so regarded), the clay floor,

which becomes soaked with the pigs' food or more dangerous filth, and the adjacent manure heap, are all highly promotive of disease. From the want of a back door, thorough airing can never be effected. The admission of domestic animals, the pig especially, has done much to propagate measles and other parasitic diseases, which are afterwards injurious to man when their flesh is used. Mr. Godwin, of the *Builder*, has often quoted the description of the way in which the inmates are disposed, as observed by a medical friend of mine:—'Generally the pigs dwell beneath the beds, the human tenants in them, and the poultry over head; the people can enjoy the prospect of bacon and chickens, which, however, they never taste.' If there be an inner room it is close and stifling, and so ill-lit that when the doctor pays his visit in the daytime a candle is required to permit him to see his patient. There are in Ireland, according to the last census, 89,374 mud or sod hovels of one room only, and 489,668 mud houses with more than one room, giving an increase in Connaught of 5168 of the latter class since 1841. The average number of persons occupying each of these dwellings is in towns 4.53, and in the rural districts 5.24. Now, the remedy for this deplorable state does not lie in the labourer's hands, however great his willingness to pay for better accommodation, but with the landlord when he recognises the duties which appertain to his property. Many diseases are produced, promoted, or rendered more fatal among the poor, and if contagious, spread to the rich by such conditions as I have sketched. The other physical and the moral evils which result from the wretched condition of the habitations of our poor, I shall not now touch on, but they are subjects pre-eminently important for the philanthropist and the statesman. The evils which neglected dwellings impress on our countrymen are carried with them when they emigrate to British and American cities, in which the term 'Irish' applied to a neighbourhood is the synonym for 'wretched and filthy;' and galling to our national pride as the expression is, no candid man can deny that there is some truth in it. It becomes the duty of every man to lend his aid in removing the causes which lead to such universally recognised degradation. The means which legislation has heretofore provided for the improvement of the dwellings of the humbler classes have been inspection and the advancement of Government loans. Inspection in towns in Ireland is only allowed in nightly lodging-houses duly registered, and only when the population exceeds three thousand, and the town has been placed under Commissioners by the adoption of the Improvement Act of 1854. As few of the towns which have adopted the Act of 1854 employ any inspector, it follows that nightly lodging-houses are unregulated in Ireland, except in a few of the larger cities. Power to inspect the tenemented dwellings of the poor in the same way as common lodging-houses are unregulated in Ireland, except in a few of the larger cities. Power to inspect the tenemented dwellings of the poor in the same way as common lodging-houses has been advocated by the ablest writers, and first and most forcibly by the Rev. Charles Kingsley; but Dublin is the only city in these kingdoms to which it

has been granted. Such powers were granted last year under the Dublin Improvement Act, and are now anxiously sought for by London and other English cities, through their health officers and representatives. Ninety-five such houses were registered and regularly inspected, and one single fact will prove with what advantage; an average of one case of fever yearly occurred in the whole of them, whereas nearly every tenement house produced a case. Such considerations induced the Corporation to seek power over tenements set weekly at rents under 3s., and the Lord Lieutenant sanctioned by-laws respecting the condition of roof, walls, windows, house-drain, and other sanitary requisites, and imposing penalties on the owner for neglect in these respects, and on the occupier for any offence in injuring or abusing such accommodations. The owners of some of these houses, which number about 9000 of the entire houses in the city, at once organised themselves into a body with the grandiloquent and scarcely intelligible title of 'The Anti-Political Rate-payers' Protective Association,' whose object was to protect themselves from the outlay necessary to render the houses fit for human habitation. By representations that the dwellings of the poor were in excellent order, that the Corporation were about to apply the by-laws for the regulation of furnished nightly lodging-houses to tenement dwellings, by memorialising that body, and threatening many of its members with opposition at the next election, and by appeals to the police magistrates, they have as yet to a certain degree impeded us, notwithstanding the deplorable state of houses, such as I have exemplified, in Gill-square and Bow-lane. On Wednesday last, however (the question having been argued by most eminent counsel), the magistrates decided in favour of the Sanitary Committee, and fined the Secretary of the Tenement Owners' Society for not having registered a house kept by him. So determined are their efforts to oppose us in carrying out the sanitary by-laws, that they have lodged an appeal to the Queen's Bench. They complain that the term 'common lodging-house' is an opprobrious epithet to apply to houses set in tenements. The difficulties of keeping a registry of 9000 houses with changing owners are so great that I trust some future Act may declare registration unnecessary for 'tenement houses,' as distinguished from 'common lodging houses,' in which such a system is required. The by-laws came into action on the 15th day of September, and the sanitary sergeants forthwith proceeded to enforce them. During the eight months the Act has been in operation 8974 houses have been visited, 92,707 sanitary defects discovered, and the largest proportion of them corrected. It is most gratifying to know that in the amended sanitary legislation which the Government have promised this session, the power of regulating tenement houses will be extended to all other Irish towns as well as the power to prevent overcrowding as at present possessed by English Acts. The Act for the inspection and regulation of lodging-houses in England, obtained by Lord Shaftesbury, was followed in 1851 by the Act to encourage the establishment of lodging-houses for the labouring classes, which provided

that in towns of 10,000 inhabitants the local authority might borrow money from the Loan Commissioners for the purpose of building wholesome dwellings for the labouring classes. This Act being a dead letter, the 'Labouring Classes Dwellings Act' (just passed through the efforts of Mr. Childers) extends the granting of loans for this purpose to public companies and to individuals, who can offer fit security at four per cent., and repayable over forty years. A similar bill for Ireland, introduced by Mr. Childers and the Attorney-General, has obtained a third reading, and it possesses a valuable additional clause, providing that buildings, ruinous or dilapidated because of defect of title, may be sold in the Landed Estates Court. Such Acts are perfect as permissive enactments; but for reasons I will just now mention, I fear that, as in the case of the Act of 1851, the supineness of municipal bodies and landed proprietors will, to a great extent, render them nugatory. In 1855 Sir W. Somerville and Mr. G. A. Hamilton obtained an Act which much facilitated the improvement of labourers' dwellings by granting the power to the landlord to recover possession under the Summary Jurisdiction Act of any tenement or cottage of a labourer, which, having been previously provided with every sanitary appliance, had fallen into dilapidation. The same member, after some unsuccessful efforts, procured the enactment of the statute sanctioning the granting of loans on most favourable terms to landed proprietors for the erection of agricultural labourers' dwellings, and the Commissioners of Public Works, to whom the management of the statute was entrusted, published regulations and specifications for the work. They also offered places for the buildings, to which, however, the proprietors were not bound to adhere. A stroll over the Hill of Howth will practically convince any one of the advantages of the Act; in few parts of Connaught could more wretched hovels be discovered than existed here some years ago. Now, these places are taken by several neat and wholesome dwellings for the labourers, which are set at highly remunerative rents. The cottages are kept in excellent order, and the same gratifying report may be made of many others of those erected under the Act. Many counties, for example, Galway, Mayo, Leitrim, and Roscommon, or nine-tenths of the western province, which most sadly required improved dwellings, have never had a loan granted, no application, I presume, having been made by the owners of the soil. Throughout the country there are a few large landed proprietors who have interested themselves in the improvement of their labourers' dwellings before this Act had been passed for Ireland, and the pretty and healthful cottages at Loughcrew, Clermont Park, Enniskerry, and Santry occur to me in illustration. With regard to the plans on which these dwellings should be constructed, I will not, of course, attempt to enter into details, but I exhibit these models from the Agricultural Museum of our society, representing some which have been erected, and these elevations and plans for a pair of labourers' cottagers have been drawn by my brother, Mr. D. Mapother, C.E., of Louisville, U.S. They are adaptable for a small or large family by extension of the

partitions, and, as all ornament is omitted, the expense would range between 60*l.* and 75*l.* each, every sanitary requisite being provided. These other plans are being carried out on the premises of Messrs. Walpole and Webb, under the direction of Mr. C. Geoghehan, architect. There are also on the table several valuable plans which have been kindly lent to me by Mr. Barry, Commissioner of Fisheries, who has laboured longer and more energetically on the subject than any one with whom I am acquainted. A friend has informed me that cottages are made for a very small sum in France, by moulding in wooden shapes the scrapings from the streets, but I fear that, like the mud cabins, they would not allow permeation of air. In London and other great cities the greatest advantages with respect to health, prosperity, and morality, have followed the erection of improved lodging-houses and family dwellings for the working classes. They have been in many instances highly remunerative, even up to 14 per cent. on the outlay. In other cases where the noble benevolence of Mr. Peabody and others justified a greater expenditure than could be recouped in rents, the return has been as low as 3 per cent. In Edinburgh, sixteen buildings accommodating 847 families have been erected, and they have all been pecuniarily successful. In this city something in this direction is at last about to be done; the Industrial Tenements Company, Limited, has just been established with a most influential directory, who have entered into the movement in a spirit of commercial enterprise, which alone can make the project remunerative, and on a scale adequate to the wants of our labouring population. The financial success of improved dwellings erected in this city by Mr. Thomas Vance, Dr. Evory Kennedy, and Mr. Lindsay has been remarkable, and there are always many eager applicants for tenements when vacant, which facts augur well for the success of the company. The most important measure in regard to the subject ever introduced is that which Messrs. M'Cullagh Torrens, Locke, and Kinnaird brought in on the 20th of February. It is entitled, 'A Bill to provide better Dwellings for Artisans and Labourers,' and applies to any borough or district in England to which the Public Health Act has been granted, or any place in the metropolis governed by a vestry. In France the dwellings of the operative classes, as well as all other sanitary matters, are directed by a special branch of the State, named 'Commission de Salubrité Publique,' and a most effective machinery is organised to see that all houses are built upon proper plans, and are preserved in good order. I will sum up in a very few words what I hope for as necessary to improve the dwellings of the poor, and thereby raise immensely the standard of public health—1st. The constitution of a central controlling authority for local government and sanitary improvement. 2nd. The enactment of a comprehensive building code, the passing of local acts being expensive is often avoided. 3rd. That our sanitary laws should be compulsory in cases of flagrant neglect; the permission to act is now very generally construed as permission not to act. 4th. A generally diffused desire on the part of employers and landowners to

provide for the healthful wants of their dependents, and they will grow according as our nation prospers, and according as the masses are educated in the knowledge of the laws which regulate the wellbeing of their own bodies. That the subject I have thus so imperfectly submitted to you is closely connected with our prosperity cannot be more forcibly expressed than in the words of the Devon Commissioners, which are painted in large letters over the entrance of our Agricultural Museum—'While the dwellings of the general body of the people are surrounded by the elements of disease, and are damp, cold, dirty, and comfortless within, so long will the country be destitute of even the semblance of general prosperity.'"

Mr. Maclean expressed his approval of the ideas brought forward in the paper, and spoke of the great necessity there existed of carrying out improvements in the sanitary condition of the dwellings of the poor. He read a number of extracts from various letters and reports in further proof of the deplorable condition of very many of the houses of the poor in Dublin. The house jobbers were the greatest curse to the city that could exist, and great opposition was given by them to sanitary improvements; but he believed they would be defeated in their attempt to stop the efforts that were being made with that object.

Mr. W. Daly said Dr. Mapother had placed before them a practical solution of the question of sanitary improvement, and the matter had so far engaged the attention of capitalists, that measures were being taken to improve the dwellings of the poor in the city. It was hoped the Corporation would follow up their efforts to enforce the by-laws for the improvement of the sanitary condition of the dwellings for the poor.

Mr. R. H. Jephson stated that in 1861 there were found people living in houses in the parish of St. Michan's at an average of nine to each bed. There were many instances of overcrowding in the city; but he was of opinion that the working men should help themselves, as had been done in England. It was not the Government's business to undertake the duty of building houses for the working classes. He dwelt briefly on the benefits that he believed would accrue from the operation of building societies.

Mr. Beggs (London) bore testimony to the value of the contents of the paper read by Dr. Mapother, and also spoke of the wretched condition of the poor of London, resulting from overcrowding. He endorsed all the sentiments contained in the paper, and he showed the necessity of adopting some measures for the removal of the evils complained of. In London there were places where fever was ever present. When people feared cholera, which only visited places after intervals of years, they forgot that typhus fever was ever present. When he visited some of the overcrowded places in the poor districts of London, where the decencies of life could not be observed, he was not surprised that so many people rushed to the gin palace and to dissipation, but he was surprised that so many had abstained from that course, and endeavoured honestly to rear up their families. He contended that it was almost

impossible to preserve the morality of a community if the ordinary rules of decency were not observed. The speaker then went on to refer to the Acts of Parliament introduced by Lord Shaftesbury, with reference to the subject; and he showed how matters stood in London, and the remedies for the removal of evils. He drew numerous lessons not only from the successes, but the failures of schemes to effect improvement in the dwellings of the working classes. These dwellings should be made to pay, and the greatest philanthropist was the person who could induce capitalists to spend money in the city with that object, in a manner that would pay. He then referred to the importance of the establishment of building and land societies, and he detailed the operations of such societies in parts of England.

Mr. Mapother, C.E., briefly referred to some plans of small houses which he exhibited, and explained their advantages.

After some remarks from Mr. N. Robinson, Dr. Steel, and Mr. Dillon, Mr. Beggs promised to supply a paper showing what had been done in England in relation to labourers' dwellings.

Harveian Society of London.

May 17, 1866—Dr. Tyler Smith, President.

Mr. Curgenven, in opening the "Debate on Infanticide," desired to direct the attention of gentlemen present to the consideration of the crime as it presented itself to them in its social aspect, rather than to the pathological evidences to be found in the various modes of death. This latter would involve a lengthened discussion on a subject with which they as practitioners were tolerably familiar. The former was a subject worthy their most serious attention, as it was surrounded by many difficulties and presented many debatable points. He would call their attention to the reported increase of infanticide in this metropolis. In one district alone—Central Middlesex—the numbers were reported to have increased from 84 in 1863 to 114 in 1865. He hoped and believed that some of these cases were the bodies of still-born infants, or of those that had lived but a short time, placed where they had been found by persons in order to save the expense of burial. He believed many bodies of infants were disposed of by being thrown into the river, the canal, or other places, by paupers who were unable to pay 7s. 6d. for burial. Some gentlemen present might possibly suggest means for checking the crime, which, from the reported cases, appeared to be confined principally to the class of domestic servants. His opinion was that if, through an alteration in the bastardy laws, the mother was led to feel that she could rely on the father being compelled to support his offspring, she would in many instances be spared the temptation, which ruin and poverty brought upon her, of destroying the child which prevented her earning her livelihood. It was no use to shut their eyes to the fact that a great many illegitimate children were borne of domestic servants; they could all call to mind numerous cases in their practice. No power could prevent their occurrence; but it was the

duty of the Legislature to entail on the man some of the consequences of his acts, while it provided for the safety of the woman and her child. How was it at present? Why, the most guilty party escaped, having perhaps promised marriage or paid a trifle for a few weeks, until he could place himself out of the reach of his victim. She, helpless, with an infant in her arms, forsaken by her relatives and former friends, was unable to bear up against her poverty and difficulties, and was tempted to destroy the innocent cause of her sufferings. Again, many children were destroyed during or soon after birth; the woman seeing, in the discovery of her situation, her future ruin, was tempted to conceal her shame by the destruction and secretion of the infant. Did she know that the father would be called upon to support her and her child, and that she would meet with some sympathy from those around her, she probably would not be tempted to commit the greater crime. He would now direct their attention to a class of cases ten times more numerous than infanticide, but which he considered were but one degree removed from child-murder—he alluded to the numerous deaths of illegitimate children through neglect, he would say *wilful* neglect, on the part of those having the care of them. As medical men, they were usually called in a few hours before the child was expected to die, that they might certify that the child died of convulsions, bronchitis, diarrhœa, or marasmus, the most common forms of death of these ill-fed, neglected infants. It was very rare that the mother nursed or reared her illegitimate child; she was forced to get a situation, and work for its maintenance. The child was placed in the care of a woman who, perhaps, had several others, and she received a weekly sum, and undertook to rear the child. Should the remittances cease, which not uncommonly occurred, the child was neglected and did not long survive. They all knew how difficult it was to rear a child by hand with a mother always anxiously watching, and a medical man guiding the selection of its food and ministering to its ailments. How much more difficult, might he ask, was it to rear children by hand by paid or unpaid nurses, ignorant, and in many cases paupers, who had neither interest nor affection for the nursling. Some remedy must be sought for this state of things, and he saw no remedy but a more perfect and compulsory registration of births and deaths. The residence of the mother or nurse of the illegitimate child should be registered, that she might be under the surveillance of the parish authorities or the police for at least twelve months; and no child, mature or otherwise, still-born or not, should be buried without a medical certificate of the cause of death. The two classes of cases he had brought before them, he considered, deserved their earnest attention, and he hoped some suggestions of alterations in the laws would be offered that would be worthy the attention of the Legislature.

Dr. Ballard said that the mortality of infants was closely connected with the question of infanticide. With regard to infanticide, he feared it was difficult to suggest any remedy for it, as society was now constituted; but with regard to the excessive mortality of infants under

the age of twelve months, he entertained very strong opinions as to the causation of a vast amount of it. Thus he thought the paper of the much esteemed lady, Mrs. Baines, who had written on this subject, and addressed a letter this evening to the Society enclosing her paper, contained some statements rather apt to mislead. He had often found that mothers, from a natural desire to suckle their own child, caused its death, on account of their being unfit to act as nurses. He believed that this was one of the great sources of infantile mortality. He had on several occasions urged this view of the matter on the profession, and had attempted to point out how many infantile maladies were caused by fruitless suckling of infants.

Dr. Drysdale said the causes of infanticide were not difficult to be understood. In the first place, there was—what medical men were least of all men apt to overlook—the intense appetite of sex, acting, like the force of gravitation, constantly to tempt to a union of the sexes. Then, again, there was the well-known evil of bringing new beings into the world without the means of securing their existence. In the case of the poor, who usually married young and begot large families, many of the children, it was well known, died from the privations they had to undergo from the poverty of their parents. It was difficult, then, for poor persons to maintain their offspring, even when they had the sanction of society for begetting them; of course it was enormously more difficult for a poor single woman, whose motherhood procured her only ruin and disgrace, to do so. And thus it could readily be seen why domestic servants, rather than any other class of women, such as factory girls, committed infanticide, since with the former character was necessary for existence. Although he thought that possibly Dr. Lankester had a little exaggerated the frequency of infanticide in London, he could quite understand why this phenomenon was on the increase. In the first place, the number of marriages had of late years been decreasing in this country. Thus, the Registrar-General's report showed that, from 1796 to 1805, there were 1716 marriages in 10,000 women; whilst from 1836 to 1845, there were only 1533 marriages to 10,000 women. Continental statistics told a similar tale. For example, Sir W. Wilde said that in Vienna, one out of every two births was illegitimate; in Munich, in 1838, there were 270 more illegitimate than legitimate children born; in Paris, some authors said that one-third of the births were illegitimate. The causes of these remarkable facts were no longer a mystery. Ever since the publication of Malthus's great "Essay on Population," it had been well known to the thoughtful few that there was no hope of successfully coping with such topics as infanticide, unless parents in society were convinced of the great evils they inflicted both on society and on their children by the production of large families. The thoughtless conduct in this respect of the majority in this and other old countries inflicted the evils of low wages upon the great mass of the citizens, and infanticide and other distressing consequences followed. Mr. Stuart Mill had pointed out very frequently, in his splendid work on "Political Economy" (without

reading which work, the speaker said, no one was, in his opinion, competent to discuss any question in social science or public hygiene), that the great hope for the future of the labouring classes of both sexes lay in the prospect of their soon being led to perceive that the production of a large family was a grave social offence, not something to be proud of, since it overcrowded the labour market in all trades and professions. The mortality of children in different countries was a good index of the state of society existing in the several states. Thus, in the long-lived country of Norway, where the condition of the peasantry was probably superior to that of any other European state, out of 100 children born, 83 attained the age of 5; in England 74; in Russia 62; and in Italy 61. Comparatively few children were wilfully killed by their parents; but there could be no doubt that the great distress caused by large families caused many mothers to neglect their children in a way which no less certainly caused death. The great dislike felt by many poor mothers to augmenting the numbers of their families was daily seen in hospital and dispensary practice, where mothers came so frequently with infants at the breast at the age of eighteen months. It was said that in Norway many suckled their children three years, in order to avoid another conception. He quite agreed with Mrs. Baines, that bringing up by hand was a most frequent cause of infantile mortality; three-fourths of all such children, it was well known, died shortly. All practical measures for lessening infanticide must be based on a knowledge of the facts he had stated. For example, with regard to foundling hospitals, as hitherto conducted, they were only a legalised State infanticide. Thus, in France the foundling hospitals received, according to M. Legoyt, 30,000 children annually, and the mortality in them was more than 50 per cent., whilst poor mothers only lost 29 per cent. of their children. In Austria, the Government of which country, according to Sir W. Wilde, encouraged illegitimacy and discouraged marriage, because married women were known to have so many more children than single ones, women were, it appeared, received into public lying-in hospitals, without any questions being asked, and their children sent to the Foundling Hospital, if they desired it. It might, then, be presumed that infanticide was rare in Vienna; but, then, the mortality in the State foundling hospitals was very great. Again, a proposal had been made by an eminent writer, Dr. Farr, in a recent essay on "The Mortality of Children in different States in Europe," that, as some families were childless, adoption of the children of those who were prolific and poor should be encouraged. Such a suggestion was not, he conceived, practical, since no one but the few would think of such a thing, and besides, it would encourage persons to beget offspring, and then thrust them on others, who were more prudent and self-denying. Summing up the question, he thought that infanticide might be diminished by making the marriage law less severe than it now was, and permitting divorce without any loss of character to either party desiring it. This would doubtless make marriage more common. Again, women should be encouraged and permitted to take up any

employment they pleased, by which means their wages would be increased, and they would not be obliged to take to prostitution or infanticide from the force of circumstances. But the most important point was, that the stigma of society should not, as now, be so severe against the maiden-mother, who had *one* child, whilst it was so lenient to the other woman who entailed, even in the married state, suffering and ignorance upon a numerous and guiltless progeny. Lastly, infanticide should not be punished by death, since this tended now to bring the law into contempt. Lying-in charities should, in the true Christian spirit, be made available for all poor pregnant women, not alone for married women. But, above all, this matter should be openly discussed, not ignored, as hitherto.

Dr. John Thompson said he had had much experience of cases of infanticide in his capacity as local magistrate in a country district. He could not agree with Dr. Drysdale that infanticide was in any great degree attributable to poverty, since he had not found this to be the case during a residence of twenty-three years in North Devon. He did not remember more than one case where poverty was the cause. His own idea was that the present law, regarding the maintenance of illegitimate children by their fathers, required much alteration. He did not, however, think that much more money compensation could be exacted from them. As the law now stood, 2s. 6d. was the sum required to be paid weekly. It was no use asking a large sum in most cases, because the fathers were, in country districts, totally unable to pay more than a small weekly sum out of their wages. He had, however, often wondered that no one had called attention to the fact that, in the case of a man marrying a woman with an illegitimate child, the whole expense of that child after this devolved on the step-father. He thought some alteration was needed in the law with regard to this point.

Dr. Hardwicke said he should not like the opportunity to pass without saying a few words, although he could add nothing to the remarks made by the coroner for Central Middlesex (Dr. Lankester) in his Third Report of Inquests for 1865, to which he would refer for full details of circumstances relating to infanticide. If Dr. Lankester had apparently exaggerated the extent of the crime of infanticide in this country, it was not that evidence of it could be found in the verdict of coroners' courts, for they certainly did not take cognisance of half the cases, whilst many escaped observation by being buried as still-born children, there being no registration needed for the burial of this class of infants. An amendment of the bastardy law offered one chance of meeting the case of those unfortunate females who are badly protected by the law in the maintenance of their illegitimate children. That change in the law also recommended by the Commission on Capital Punishment, making it an offence punishable by imprisonment, or penal servitude, for a woman who maliciously or wilfully injures her child at or after birth, would bring many cases to justice which now easily escape conviction under the present state of the law. Unfortu-

nate and needy women, with a prospect of illegitimate offspring, required more protection than our institutions afforded them, and he (Dr. H.) was not inclined to indorse the opinion that foundling hospitals were sources of evil rather than good. Certainly, industrial institutions, or houses, if maintained at the expense of the state or parish, would tend to avert much misery and disgrace to young women, and would save rather than increase the expense of crimes that sprung from the present way of dealing with mothers and their illegitimate offspring by the union workhouses.

Mr. Benson Baker had had large experience of infanticide and infantile mortality. He lived in a part of town where large nurseries for children existed. It was by no means uncommon to see in one room three, five, or seven children nursed by one woman. The mortality among such children was very great, and in no one instance in which inquests had been made had he ever seen the father appear. Public opinion was required to put women in their proper position. Industrial homes ought, he thought, to be established, where women might enter after their confinement was over; as it was, ten days after this took place they left their children and entered service.

The President said he had often heard the Coroner, Mr. Wakley, speak of infanticide. That gentleman held that the best policy was to stifle the matter, and say as little as possible about such cases, and he consequently avoided inquests in cases of suspected infanticide.* He (the President) believed the contrary, and thought it was much better, as Dr. Lankester was doing, to bring these questions before the public, and into the light of open discussion. He was sure that a great deal of infanticide escaped unknown. Thus, he had been told, that women were frequently delivered into wash-tubs, the room where they were confined being made to assume the appearance as if washing were going on. There was, he regretted to say, no efficient foundling hospital in London. He did not agree with Dr. Drysdale that, because so many children died in foundling hospitals in France, an equal number would die in this country, if similar institutions were in existence here.

Mr. Sedgwick in reply to an observation of the President, that nothing had been done during the last hundred years to increase the provisions made for foundlings, remarked that, within the last two years, an institution, entitled "St. Saviour's Hospital and Refuge for Destitute Women and Children," had been established by private charity, with which he had the honour of being professionally associated. Its object was to check the increasing sin of infanticide, by affording a shelter to outcast and friendless women and children. It contained a nursery, in which children were received from the earliest age; a boys' and a girls' school, in which the children received a plain education, and were trained for service, suitable situations being obtained for them before they leave; and, lastly, a Refuge, distinct from the rest of the house, and fitted up for the reception of outcast females, to which is attached a lying-in ward. Mr. Sedgwick, in con-

* Dr. James Wakley, son of the late coroner, has denied, in a letter to the *Times*, that his father ever stifled inquiry in these matters.

clusion, remarked that Dr. Lankester, as visitor, had cordially approved of the institution, and that Miss Willis Fleming, of 35, Bryanston-street, who was its superintendent and chief support, would willingly give any further information on the subject.

Dr. Cleveland said there was a remark he wished to make—namely, that it was deplorable with what facilities certificates of death were procurable in some cases. He instanced the case of a girl who was delivered of twins, one of which died, and she obtained a certificate of its death; but on her coming again to demand a certificate for the second, it was refused until an examination was made. She immediately said it was of no consequence, as she knew a doctor at Islington who would give her the certificate without any trouble. He thought the Harveian Society would do well to bring some such matters before the attention of the Legislature.

Mr. Curgenven, in reply, said he was glad that some practical suggestions had been offered for checking the crime of infanticide and the excessive mortality obtaining among illegitimate children. The medical profession had always led the van in social and sanitary reforms, and he considered that the Harveian Society, from the labours it had devoted to the social evils, could not perform a higher duty than to act on the debate of this evening, and bring some suggestions, supported by evidence and facts, before the Legislature and Poor-law Board, that might lead to alterations in the laws, whereby those evils might, in some degree, be checked. He would propose "that a committee be formed, consisting of the following members:—Dr. Tyler Smith, the President; Mr. Curgenven and Dr. Charles Drysdale, the Honorary Secretaries; Dr. Hardwicke, the Deputy Coroner; Mr. Ernest Hart; Dr. Sanderson, Medical Officer of Health for Paddington; Mr. Benson Baker and Mr. Sedgwick, with whom should be associated Dr. Lankester, the Coroner for Central Middlesex, to draw up a report on Infanticide, with the object of suggesting the best means for checking the crime, and to report on the causes of death of young children, the best means for preventing excessive infantile mortality, and to suggest some plan for the care and rearing of illegitimate children other than the present workhouse system."

Dr. Hare seconded the motion. He considered that the labours of such a committee as proposed would be attended by many good results.

The proposition was put and unanimously adopted by the meeting.

Communications on this subject were invited to be sent to Mr. Curgenven, 11, Craven Hill Gardens, W.

National Association for the Promotion of Social Science.

Report to the Annual Business Meeting of Members.

July 6, 1866—Lord Brougham in the Chair.

The Council have found it convenient this year, as was also the case last year, to summon the Annual Business Meeting of Members at an earlier date than usual. They have, however, been able to wind up the financial and other business of the year in a satisfactory manner.

Special Evening Meetings.—Special meetings have been held in all the Departments during the Session, from November to June. The total number of meetings has been twenty, and the following papers and reports have been read and discussed:

Nov. 13. Address to the Department of Jurisprudence and Amendment of the Law, on the opening of the Session of 1865-66. By G. W. Hastings.

Nov. 27. The Palace of Justice. The Site, Approaches, and Arrangements of the Courts and Offices of Judicature. By Thomas Webster, Q.C.

Dec. 11. Tribunals of Commerce or Courts of Arbitration. By H. J. Leppoc.

Jan. 22. The Home Accommodation of the People, in Relation to their Domestic and Social Condition, with Practical Suggestions as to the further development of Freehold Land Societies and Building Societies. By Thomas Beggs.

Jan. 23. On the Reform of the Law of Debtor and Creditor. By William Hawes.

Jan. 26. University Tests. By Hon. George Brodrick.

Jan. 29. A Discussion on the Patent Laws.

Feb. 12. The Expediency of making Marriage a Civil Contract Compulsorily. By Dr. Waddilove.

Feb. 14. An improved Constitution of Local Governing Bodies, and on the Legislation on Local Subjects which may be safely and beneficially transferred to them. By Thomas Hare.

Feb. 21. The Education of Neglected and Destitute Children. By Rev. W. L. Clay.

Feb. 26. On the Affiliation of Illegitimate Children. By J. Guest, Q.C.

March 12. Report of the Sub-Committee on the Patent Laws.

March 21. The Third Annual Report of the Coroner for Central Middlesex. By Dr. Lankester.

March 26. On the Report of the Royal Commission on Capital Punishment. By Serjeant Woolrych.

April 16. Adjourned Discussion on the Report of the Sub-Committee on the Patent Laws.

April 23. Adjourned Discussion on the Report of the Capital Punishment Commission.

April 30. That the Assumption of Surnames and Armorial Ensigns should be subject to some Legal Control and Restriction, and that, as in the case of Peerage, there should be some competent Tribunal to decide on rights and claims to Baronetcies. By Serjeant Burke.

May 23. On the Pollution of Rivers. By Robert Rawlinson, C.E.

May 28. Report of the Sub-Committee on the Bankrupt Law.

June 4. Adjourned Discussion on the Report of the Sub-Committee on the Bankrupt Law.

The various papers and reports have been printed in the monthly *Journal of Social Science*, copies of which have been, by an arrangement with the Editor, Dr. Lankester, sent free of cost to all members

paying two guineas a year. The sessional papers of the Association are paged consecutively, so that, if it is wished, they can be detached from the other part of the *Journal* and bound as a separate volume.

The Resignation of Miss Craig (Mrs. Knox).—At their meeting on the 8th of March, the Council received from the Executive Committee a report of Miss Craig's resignation. On the receipt of this report, it was moved by Lord Ebury, seconded by Mr. Shaen, and carried unanimously—"That the Council have heard with great regret of the resignation of Miss Isa Craig, and desire to record their high sense of the value of her services to the Association, and their gratification at learning that she is willing to remain connected with the Secretariat in an honorary capacity; and that they hereby authorise the Executive Committee to take the necessary steps for the acceptance of Miss Craig's offer."

The Appointment of a Secretary.—In consequence of Miss Craig's resignation, the Executive Committee recommended that a Secretary should be appointed, and that the offer of the Rev. W. L. Clay to accept the office should be accepted. The recommendation was adopted as a temporary arrangement until the pleasure of this meeting could be taken; and, in order to render the office permanent, for which end certain alterations are needed in the laws, the necessary resolution will be to-day moved by the General Secretary.

The Presidency.—At the meeting of the Council on June 22nd, Lord Brougham announced that he felt himself obliged to decline re-election for the ensuing year to the office of President. The following resolution, moved by Sir J. K. Shuttleworth, and seconded by Mr. Hastings, was carried unanimously:—"That the Council have heard with great regret the announcement made by Lord Brougham, that he finds it indispensable to decline to preside at the ensuing Annual Meeting at Manchester, and they cannot receive this announcement without putting on record their grateful sense of the great services which his lordship has rendered to the Association as its President from the commencement, and by his presence and addresses at every Annual Meeting, as well as by the exertion of his personal influence to promote the success of all the objects which the Association has had in view."

The General Secretaryship.—At the same meeting, Mr. Hastings informed the Council that, for reasons which he stated, it was his sincere wish not to be re-elected General Secretary for the ensuing year, as it would be quite impossible for him to give the same time and attention to the business of the Association that he had hitherto given. The Council, however, were unanimously of opinion that the services which Mr. Hastings could still give, even under the altered circumstances to which he referred, would be invaluable, and they therefore strongly recommend this meeting to re-appoint him to the office.

Working-men's Dwellings.—The Legislative Business Committee, in conjunction with a Committee appointed by the Society of Arts, prepared a Bill for the improvement of dwellings for the labouring classes;

but in consequence of a Bill, entitled the "Artisans' and Labourers' Dwellings Bill," having been introduced into the House of Commons by Mr. M'Cullagh Torrens, and referred to a Select Committee, the introduction of the Association's Bill was delayed. As, however, Mr. Torrens's Bill, as amended by the Select Committee, does not compass the wishes of this Association and the Society of Arts, it is purposed to procure the first reading of the Bill prepared by them with a view of its further prosecution next year.

Digest of Case Law.—The Council resolved, on the 30th of November last, that the attention of the Government ought to be called to the expediency of forming a Digest of the Case Law of England. A Memorial to Earl Russell was accordingly prepared by a Committee appointed for that purpose, and was presented to his lordship, who has informed the General Secretary that the subject is under the consideration of the Government.

Annual Accounts.—The accounts for the year have been made up and audited. The receipts from the Sheffield Meeting amounted to 589*l.* 8s. 6d.

Donations to the Library.—During the past year the Council have received many gifts for the Library. In particular they have to thank Mr. Edwin Chadwick for upwards of 300 volumes, many of them rare and valuable; and Mr. David Dudley Field for a copy of the proposed Code for New York, prepared by the Government Commission of which he was a member.

Deceased Members.—Among other members deceased during the past year, the Council have to deplore the loss of Joseph Parkes, Esq., Sir Benjamin Heywood, Joseph Dickenson, Esq., F.R.S., F. D. Goldsmid, Esq., M.P., Dr. Conolly, G. Harry Palmer, Esq., Dr. Lee, Q.C., Dr. Hodgkin, James Stevenson, Esq., James M'Clelland, jun., Esq., and William Barlow, Esq.

The tenth Annual Meeting of the Association will be held in Manchester, from the 3rd to the 10th of October next.

The following are the Special Questions chosen by the Standing Committees of the several Departments for discussion at the Meeting:

I. JURISPRUDENCE AND AMENDMENT OF THE LAW. Section A. *International Law.*—1. What are the best means of extending and securing an International Law of Copyright? 2. What is the duty of the Mother Country as regards the Protection of Inferior Races in her Colonies and Dependencies? 3. How may the Extradition of Criminals be best secured, consistent with the right of asylum? Section B. *Municipal Law.*—1. On what principle should a Bankrupt Law be founded? 2. What would be the best mode of reducing the Law of England to a compendious form? 3. What conditions or limitations ought to be imposed upon the power of disposing in perpetuity of property, real or personal, for charitable or other public purposes?—Section C. *Repression of Crime.*—1. Is it desirable to carry out Life Sentences to the utmost? and if so, in what cases, and under what form of discipline? 2. What are the best means of preventing In-

fanticide? 3. In what other Public Institutions besides Gaols is it expedient that Coroners should be required to hold Inquests in all cases of death?

II. Education.—1. By what means can the impediments to the Education of the Children of the Manual Labour Class, arising from the apathy or poverty of parents and the claims of the market for labour, be most effectually removed? 2. What Central and Local Bodies are best qualified to take charge of and administer existing Endowments for Education, and what powers and facilities should be given to such Bodies? 3. By what means can Education be most effectually extended to the smaller Rural Parishes and the most Destitute Classes in large Towns?

III. Health.—1. What means ought to be adopted to prevent the production of Smoke in Large Towns? 2. How can the Pollution of Rivers, by the refuse and sewage of towns, be best prevented? 3. What Legislative or other measures should be employed more effectually to prevent the Adulteration of Food?

IV. Economy and Trade.—Section A. 1. Upon what conditions and by what authorities ought Licences for the Sale of Alcoholic Liquors to be granted? 2. What measures, Legislative and other, should be adopted in order to supply better Dwellings for the Labouring Classes? 3. What means ought to be adopted for Improving the Management of Workhouses?—Section B. 1. Does the Bank Charter Act need modification? 2. Is it expedient to adopt means for Reducing the National Debt, and if so, what means? 3. What Improvements might be introduced into our existing system of Taxation?

British Association for the Advancement of Science.

The thirty-sixth meeting will commence on Wednesday, the 22nd of August, 1866. President, William R. Grove, Esq., Q.C., M.A., F.R.S. The following notices of arrangements for the meeting have been published:—

The general committee will meet on Wednesday, the 22nd of August, at 1 p.m., for the election of sectional officers, and the despatch of business usually brought before that body. On this occasion, there will be presented the report of the Council, embodying their proceedings during the past year. The general committee will meet afterwards by adjournment. The first General Meeting will be held on Wednesday, the 22nd of August, at 8 p.m., when the President will deliver an Address; the Concluding Meeting on Wednesday, the 29th of August, at 3 p.m., when the Association will be adjourned to its next place of meeting. At two Evening Meetings, which will take place at 8 p.m., discourses on certain branches of science will be delivered. There will also be other evening meetings, at which opportunity will be afforded for general conversation among the members. The committees of sections will meet daily, from Thursday, the 23rd of August, to Wednesday, the 29th of August inclusive, at 10 a.m. precisely. The sections will meet daily, from Thursday, the 23rd of August, to Tuesday, the 28th of August inclusive, at 11 a.m. precisely. Reports on the Progress of Science, and of Researches entrusted to individuals and

committees, and other communications intended for presentation to the sections, are expected to be forwarded in letters addressed to the Assistant General Secretary, at Nottingham, previously to the meeting, accompanied by a statement whether the author will be present, and on what day, so that the business of the sections may be satisfactorily arranged. The reports complete, and concise abstracts of other communications, are to be delivered to the secretaries of the sections before which they are read, previously to the close of the meeting, for publication in the "Transactions." As the reports on science may be interesting to more sections than the one which originally called for them, it is desirable that the authors should be prepared to furnish the means of reading them in any other section at the request of the President and Secretaries of that section.

The following are the titles of the sections to which communications may be presented:—Section A. Mathematics and Physics.—B. Chemistry and Mineralogy, including their applications to Agriculture and the Arts.—C. Geology.—D. Biology.—E. Geography and Ethnology.—F. Economic Science and Statistics.—G. Mechanical Science.

Election of Members and Associates.—On and after July 30, until August 17, life members who intend to be present at the meeting, may receive their tickets by applying to the General Treasurer, and returning to him their life member's invitation circular; annual subscribers who wish to receive their tickets must return their invitation circular, with 1*l.* enclosed, to the General Treasurer, W. Spottiswoode, Esq., 50, Grosvenor-place, London, S.W.

The executive committee at Nottingham will elect new members and associates, on the following conditions:—

I. New life members, for a composition of 10*l.*, which entitles them to receive gratuitously the reports of the Association, which may be published after the date of payment.

II. New annual subscribers, for a payment of 2*l.* for the first year. These receive gratuitously the reports for the year of admission and for every following year in which they continue to pay a subscription of 1*l.*, without intermission.

III. Associates for this meeting only, for a payment of 1*l.* They are entitled to receive the report of the meeting at two-thirds of the publication price.

Ladies may become members on the same terms as gentlemen. Ladies' tickets (transferable to ladies only) may be obtained by members, on payment of 1*l.*

After August 17 personal application for tickets must be made at the reception room, Nottingham, which will be opened on Monday, August 20th. The reception room will be kept open for the issue of tickets not later than 8 p.m. on soirée evenings, and not later than 6 p.m. on other evenings.

Gentlemen who have in any former year been admitted members of the Association may, on this occasion, renew their membership, without being called upon for arrears, on payment of 1*l.*

CORRESPONDENCE.

"TEETOTALISM CALMLY STATED."

To the Editor of the SOCIAL SCIENCE JOURNAL.

DEAR SIR,—I have read "The Question of Teetotalism Calmly Stated" with great interest, and am much obliged to you for inserting, as well as to the author for writing, so fair and moderate a statement of the views and objects of our societies.

I would, however, beg to make one remark upon a clause on the first page, which might give rise to a false impression among those of your readers who are not familiar with the teetotal movement. The writer draws too sharp a distinction between the work of the teetotallers and of the Permissive Bill advocates. The great majority of the teetotallers of England are certainly prohibitionists; and with few exceptions the prohibitionists are teetotallers. If you were to consult the oldest and most experienced advocates and leaders of the teetotal societies, you would find that they maintained principles at the very beginning of the teetotal movement which involved the prohibition of the manufacture and the sale of intoxicating drinks, and the United Kingdom Alliance, of the executive of which I have the honour to be a member, was not founded to introduce any new principles into our movement, but simply to carry out one portion of our great scheme.

During this week the oldest temperance organization of the kingdom, the British Temperance League, has been holding its annual conference; it represents more than one hundred and fifty temperance societies, and I believe I am not outstepping the bounds of truth, if I say that there is not one of these auxiliaries which is not as earnest in its endeavours to promote the prohibition of the sale of intoxicating drink as it is in its advocacy of the duty of personal abstinence.

The United Kingdom Alliance numbers a few non-abstaining members, it is true, but all its active leaders and agents are total abstainers, and its executive numbers amongst its members men who have abstained for more than forty years from the use of intoxicating drinks.

I look forward with much interest to the further contributions of the writer in your number for the current month. So candid and so calm and thoughtful a writer cannot fail to do our great cause much good.

I am, dear Sir, very faithfully yours,

71, Upper Brook-street, Manchester, July 13, 1866. S. ALFRED STEINTHAL.

FREE PUBLIC LIBRARIES.

To the Editor of the SOCIAL SCIENCE JOURNAL.

DEAR SIR,—I trust you will consider the object referred to in the enclosed paragraph worthy of your advocacy and support.

Yours faithfully,

60, Paternoster-row, London, July 18, 1866. A. HEYLIN.

New York possesses the magnificent Astor Library, containing about 100,000 volumes in every department of literature, open freely to the public for reference every day from nine to five. It has also a City Library free, open daily from ten to four; an Apprentices' Library—established solely for the use of apprentices and females in the employ of mechanics and tradesmen, and open freely to this class from eight in the morning till nine in the evening; a Medical Library, free, open from ten to ten; a Printers' Library, containing more than 4000 volumes, also free; and now there is every prospect of another free Library being added on a large scale. Boston, by a Special Act of the Massachusetts Legislature, in 1848, was provided with a free public library, and had granted from the City Funds 5000 dollars a year for its maintenance. Immediately on its establishment energetic citizens contributed largely in books and money towards the preliminary expenses, and a citizen of London (Mr. Joshua Bates),

connected with Boston by business and personal ties, presented a sum of 10,000*l.* sterling for the purchase of books. Throughout the United States, libraries—readily accessible to all in search of knowledge—are numerous, and one result is that in intelligence, in acquaintance with literature and knowledge of the best writers in their language, the American people are unequalled in the world. But it was not left for democratic institutions to set an example in this respect—France possesses more than 100 public libraries, open freely to all comers, without distinction of person, rank, or country; Austria and Prussia together have nearly 90; Bavaria has 17; Belgium 14; and other European kingdoms have a fair share. Until the passing of Mr. Ewart's Act, in 1850, for enabling town councils to establish public libraries and museums, England had the unhappy pre-eminence of being without a single strictly free public library. Paris now possesses seven perfectly free public libraries, Vienna has three, and Berlin two. The library of the British Museum was, and is still, we think, properly available to readers only under certain restrictions. The libraries of Sion College and of Dr. Williams' also were and are subject to restrictions which prevent their free use by the public. These three libraries, however, are, at the present moment, notwithstanding the activity of provincial towns, the only libraries available for inhabitants of this great city of London, and the restrictions to which we have referred, including the hours during which they are open, render them totally useless for the man of business, the clerk, the mechanic, and the artisan. Many smaller towns and cities throughout England have voluntarily taxed themselves under the provisions of the Act of Parliament referred to, and have established libraries, most of which are rendering immense service to the cause of education. London, which of all other cities in the world owes most of its position to the intelligence, education, and activity of its citizens, stands to our thinking degraded and disgraced for its apathy in this matter. Is there no public spirit among our bankers and merchants equal to that which has made John Jacob Astor's name one to be carried down to the remotest posterity, accompanied by the thanks and blessings of those whose intellectual advancement has been promoted by his princely liberality? Is the accumulation of wealth alone the object of ambition to our citizens, and have they no desire to contribute aid towards the elevation and improvement of the masses? We hear of political reform till we are sickened with the very name—and recognise it only as the war-cry of a party and the red flag of political antagonism—but this branch of social reform, the truest and surest of all reforms, is left unheeded and uncared for. Among the bankers, merchants, and traders of our city there are men who have felt it an honour to enrol themselves in the ranks of literature, whose fame hereafter will depend more upon their contributions to literature and science than to anything they may have done in the accumulation of wealth, such men—honoured and respected in all circles, possessing the confidence and respect of their fellow-citizens—we call upon to be up and doing in this matter, let them initiate measures for the establishment of a Free Public Library in this City,—a library which shall be an honour to the first City of the World. The contribution of their wealth, and, more than all, the influence which their active exertions will give to such a movement, is sure to rally around them a body of supporters whose energies and exertions will be irresistible. It is apathy, not opposition, that has to be overcome; antiquated prejudices doubtless prevail—penny wise and pound foolish difficulties may be urged, but these are mere cobwebs which will be swept away with ease by a body of determined men. The aim of such a movement as we speak of should be to induce the Corporation of the City of London to grant an eligible and central site for a building, and to contribute from its funds a sum towards the expenses of erection and endowment; such sum to be supplemented by voluntary contributions, and we have such confidence in our fellow-citizens, that we believe individual subscriptions will be by hundreds and even thousands of pounds towards such an object. Apart from the benefit which will result to the inhabitants of this city from such a Library, a movement in this direction on the part of the Metropolis will set in motion similar active exertions throughout the country, and we hope the day is not far distant when our country will stand first among the nations of the world in the activity of its educational institutions, and the extent of its means for imparting knowledge.—*Trübner's Literary Record*, July, 1866.

[We willingly insert the above paragraph at the request of Mr. Heylin. We think it a deep disgrace to the metropolis that no effort should have been made to establish a free library.]

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BOOKS AND PAPERS RECEIVED.

"Report on the Health of Liverpool during the March and June Quarters, 1866," by W. J. Trench, M.D. Liverpool: Hewson and Proctor. "Eighth Report of the Medical Officer of the Privy Council, with Appendix, 1865." London, Spottiswoode. "The Curriculum of Modern Education, and the Respective Claims of Classics and Science," by Joseph Payne. London: Virtue Brothers. "Twenty Years' Experience of a Public Vaccinator," by William S. Collins, M.D. London: Caudwell. "Local Courts and Tribunals of Commerce," by R. M. Pankhurst, LL.D. Manchester: Simms, & Co. "An Address Delivered at the Annual Meeting of the Medical Association of Ireland," by T. L. Mackesy, M.D. Waterford: Harvey. "Vivisection: is it Necessary or Justifiable; being Two Prize Essays—one by G. Fleming, Esq., the other by Dr. W. O. Markham. London: Hardwick.

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Though from its very nature the undertaking must have a philanthropic tendency, it will be conducted upon purely commercial principles; as it is believed that the great object of Dwellings Improvement can be most effectually advanced by showing that capital may be profitably invested in this manner.

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